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HEBERDEN'S NODES *

Their Relation to Other Degenerative Joint Diseases

ROBERT M. STECHER, M.D.

CLEVELAND

Heberden's nodes are manifestations of degenerative joint disease usually affecting the terminal and occasionally involving the proximal interphalangeal joints of the fingers. They are described as the characteristic lesion of this disease, the commonest and the most easily recognizable feature of a general condition involving many joints. Actually, they are seen in only a small proportion of the patients who seek medical advice because of degenerative joint disease. The present study is a review of a series of the cases of women with Heberden's nodes to discover what proportion of the patients have noteworthy degenerative disease of other joints and to compare this with the proportion of this disease found in a similar group of women.

The series consists of 94 women with idiopathic Heberden's nodes who were discovered on the medical service at City Hospital or came to my office as private patients. The criteria for the diagnosis of and distinction between idiopathic and traumatic Heberden's nodes have been described in detail in a previous publication.¹ Diagnosis depends upon deformity of the terminal joints of the fingers consisting of enlargement visible on the dorsum of the finger and in severe instances on the lateral aspects also. The enlargement is palpable as a firm to bony hard ridge attached to the proximal end of the distal phalanx. A further stage of the disease produces flexion deformity of the terminal phalanx. In the final stage there is also lateral deviation of the terminal phalanx to either side. Idiopathic Heberden's nodes arise spontaneously, involve fingers of both hands and must be distinguished from traumatic Heberden's nodes arising as a result of injury. This study is confined to women. Most of the patients had a thorough physical examination; the others at least had all joints investigated by palpation, and function was tested by observation of range of active and of passive motion.

The group consists of 66 index cases of the previous study, women with Heberden's nodes and 28 affected sisters who were examined. They ranged in age from 36 to 76; the median age was 60.2 years and the average was 59.7. It was a group of middle-aged or elderly women, a group one might suspect of having a high incidence of degenerative joint disease.

During a study on the heredity of Heberden's nodes² a control series of women was assembled, chosen simply because they were the sisters of women who did not have Heberden's nodes. The group was selected to have about the same size and the same age distribution as the group of women with Heberden's nodes. The incidence of Heberden's nodes in the sisters of the control group was 5 in 109, what one would expect in the population, in general compared with 33 in 129 found in the study series.² This control group ranged in age from 32 to 77, with a median age of 55.3 and an average of 55.9. As will be seen from the table, the control series contained 109 subjects, compared with 94 in the study series. It was larger in the fourth and fifth decades and smaller in the sixth decade than was the study series of subjects with Heberden's nodes.

* From the Department of Medicine, Western Reserve University School of Medicine at City Hospital.
1. Stecher, R. M.: Heberden's Nodes: The Incidence of Hypertrophic Arthritis of the Fingers. *New England J. Med.* 222:300, 1940.
2. Stecher, R. M.: Heberden's Nodes: Heredity in Hypertrophic Arthritis of the Finger Joints. *Am. J. Sc.* 201:801, 1941.

Heberden's Nodes

Age	No. of Cases	Other Arthritis	Minor Complaints	Joint Crepitus
Study Series				
36-39	3	0	0	0
40-49	14	0	1	4
50-59	25	4	5	8
60-69	36	4	7	12
70-86	16	4	6	10
Total	94	12	19	34
Control Series				
31-39	3	1	0	0
40-49	29	0	0	8
50-59	35	2	0	7
60-69	26	0	0	8
70-79	16	0	0	2
Total	109	3	0	25

Of the 94 women with Heberden's nodes, 12, or 12.6 per cent, were found to have degenerative joint disease. In 11 patients this involved one knee; in 1 it involved a hip. It was never severe enough to incapacitate the patient, but it did cause serious inconvenience and discomfort in most instances. Deformity was not marked, but limitation of motion and crepitus was noted in all the affected knees. Several of the patients had a decided limp, but none required a cane or crutch. All took acetylsalicylic acid and many had resorted to physical therapy, particularly diathermy and massage at one time or another. Aside from the 12 patients just mentioned, 19 other patients complained of arthritis or rheumatism; they had transient stiffness, occasional soreness, questionable swelling and resort to acetylsalicylic acid



Fig. 1. — Hands of a 57 year old woman whose Heberden's nodes started at 45. All fingers except the ring fingers show enlargement, flexion deformity and deviation from the midline of the terminal joint. There is obvious enlargement of the proximal joints of both index fingers, the left ring finger and the left little finger. The rest of the hand appears to be normal.

for relief. Their symptoms were intermittent, but there were no objective signs of disease warranting a clinical diagnosis of degenerative joint disease. No effort was made to investigate these patients routinely by roentgen ray examination.

All knees were tested by palpation during motion for crepitus. Crepitus was noted in 34, or 36 per cent, of the cases. This condition was often unnoticed by the patient. It can not be considered normal. It does not of itself warrant a diagnosis of degenerative joint disease. It is not necessarily a forerunner of future joint disability. The significance of crepitus in these cases is not clear.

Of the 109 persons of the control series, 3 had definite degenerative joint disease of a knee, diagnosed because of pain, limitation of motion and deformity and comparable to that of the persons mentioned in the first group. One additional patient not mentioned in the table had ankylosis of one knee,



Fig. 2. — Marked bone changes in all of the terminal joints except that of the right ring finger. There is increased production of bone, irregularity of joint surface and decrease in joint space with spur formation. The proximal interphalangeal joint of the left ring finger shows marked hypertrophic changes. The left ring finger shows moderate abnormality. The other joints seem to be approximately normal. This is the same pair of hands seen in figure 1.

the end result of a tuberculous infection in childhood. No instances of other arthritis or rheumatism without objective signs were discovered in this series. Crepitus was noted in only 25, or 23 per cent, of the subjects.

As one reflects on these two comparable groups of women, an inspection of the table reveals at once the marked preponderance of degenerative joint disease in the patients with Heberden's nodes compared with those of the control series. The occurrence of joint disease with objective evidence of pathologic change explaining the symptoms in 12 of 94 cases compared with 2 of 109 cases is obviously too great to be explained by chance alone. The absence of recognition of indefinite arthritis or rheumatism in the control series may be explained in part to the fact that these people were seen only once, at which time they acted as passive but puzzled objects of what seemed to them to be an unimportant and useless examination. Members of the series of affected women, in contrast, were seen frequently over a period of months, and they had ample opportunity to recall and describe different and transient complaints. Even the presence of joint crepitus, a finding of doubtful significance which must nevertheless be looked on as a mild form

of joint disarrangement, occurred half again as often in patients with Heberden's nodes as in the control group.

Idiopathic Heberden's nodes are a particular form of degenerative arthritis, the exact cause of which is not clearly understood. The incidence of Heberden's nodes is influenced markedly by age, sex and race,¹ but the most important single factor so far recognized is heredity.³ The genetic mechanism of the disease involves a single autosomal gene, sex influenced, being dominant in females and recessive in males. Penetrance is dependent on age; hence the condition is nearly unknown in the first two decades, rare in the second and third decades and complete only after the sixth decade. Gene frequency analyses reveal that the trait occurs in 27 per cent of the population as a heterozygote, the theoretic incidence of Heberden's nodes in women over 80 years of age and in 2.7 per cent as a homozygote, the theoretic incidence in men of great age. Theoretically Heberden's nodes occur in women at least ten times as commonly as in men.

Heberden's nodes have been described by Comroe⁴ as the commonest manifestation of degenerative joint disease and are diagnostic of degenerative joint disease. Meakins⁵ stated they are practically always present in osteoarthritis. Dawson⁶ called this one of the most frequent of all forms of osteoarthritis. Monroe⁷ said "that they are but part of a generalized hypertrophic arthritis although they may be the chief sign." Hench⁸ said: "Heberden's nodes are the most distinctive expression of senescent arthritis." Steinbrocker⁹ called Heberden's nodes "the most frequent and noticable form of articular involvement in women."

On the other hand, O'Reilly¹⁰ stated, "Heberden's nodes are included as a form of osteoarthritis, but in 50 consecutive cases of well marked osteoarthritis I found no sign of them." This statement seems to me to be nearer the truth than are the others.

My figures indicate that Heberden's nodes are by no means universal, even in a population of great age. In 151 men of over 70 years of age they were found in about 3 per cent and in 184 women of the same age in about 28 per cent. They are much rarer in younger women, occurring in less than 3 per cent of women under 60. They apparently occur no more frequently than this in patients with other degenerative joint disease.

On the other hand, degenerative joint disease of other joints was seen frequently in patients with Heberden's nodes, over six times as frequently as in the control series. Although Heberden's nodes may be a particular form of degenerative joint disease, their presence seems to identify the victim as a person with an increased susceptibility to degenerative joint disease elsewhere in the body.

The treatment of Heberden's nodes has not been satisfactory. No known therapy will make the deformities disappear once they have developed, nor has any procedure been discovered to prevent their appearance or their spread to further fingers in susceptible persons. The condition is relatively painless, but during early development the joints are inflamed and the seat of soft enlargement. Such inflamed enlargements are tender, and the fingers need protection against trauma as well as against cold. Acetylsalicylic acid gives some relief. If symptoms persist and are sufficiently severe to require it, hot soaks at home several times a day or paraffin packs

3. Stecher, R. M., and Hersch, A. N.: Heberden's Nodes: The Mechanism of Inheritance in Hypertrophic Arthritis of the Fingers. *J. Clin. Investigation* 23:609, 1944.

4. Comroe, B. L.: Arthritis and Allied Conditions, ed. 3, Philadelphia, Lea & Febiger, 1944.

5. Meakins, J. C.: The Practice of Medicine, ed. 4, St. Louis, C. V. Mosby Company, p. 1164, 1944.

6. Dawson, M. T.: Chronic Arthritis, in Nelson's Loose-Leaf Living Medicine, New York, Thos. Nelson & Sons, 1935.

7. Monroe, R. T.: Chronic Arthritis, New York, Oxford University Press, 1939.

8. Hench, P. S.: Acute and Chronic Arthritis, in Nelson's Loose-Leaf Living Surgery, New York, Thos. Nelson & Sons, 1935.

9. Steinbrocker, O.: Arthritis in Modern Practices, Philadelphia, W. B. Saunders Company, 1942.

10. O'Reilly, T. I.: Osteoarthritis. *J. Roy. Inst. Pub. Health & Hyg.* 1:73, 1937.

several times a week are indicated. This condition of tenderness and sensitivity is temporary, lasting from a few months to a year. The patient with Heberden's nodes frequently complains of degenerative joint disease of other joints, which also require treatment with physical means.

PHYSICAL RECONDITIONING OF THE KNEE FOLLOWING REMOVAL OF MENISCI *

MAJOR FREDERICK LEE LIEBOLT, M.C.

and

CORPORAL J. JOHN STEIN, M.S.

Army of the United States

Injuries to the menisci of the knee joint have been numerous throughout the armed services in World War II, and untold numbers of operations for the removal of such menisci have been performed. Experience has shown that proper end results more often are dependent on the proper postoperative care than on the actual operation itself.

This paper presents a program in physical reconditioning as used at the Army Air Forces Regional and Convalescent Hospital, Coral Gables, Fla. The plan which is offered is based on 118 operations performed at this installation for removal of injured menisci of the knee joint.

Program

During the first nine days the patient is bedridden. The first day is considered to be the day after the operation.

First Day

- (a) The active movement present at this time is slight, irregular and unplanned and is based on the patient's desire to alleviate pain and discomfort. The surgeon or physical instructor begins treatment by reassuring the patient, lifting the leg carefully and moving the knee passively.

Second Day

- (a) Same as first day.

Third Day

- (a) Gravitational flexion of the knee by the instructor. This is performed by the instructor placing his forearm on the posterior aspect of the knee and slowly raising it, thus permitting the knee to flex because of the weight of the leg.
- (b) Active quadriceps contraction, bilateral.
- (c) Knee and hip flexion. This is performed by instructing the patient to maintain the ankle in plantar flexion and then to slide the heel up the bed toward the buttock.
- (d) Rotation of both ankles.
- (e) Active flexion of the entire leg, performed alternately, while the knee is held extended.
- (f) Sit-ups. The method of touching the opposite elbow to the opposite knee should be used to produce rotation of the spine.

Fourth Day

- (a) Gravitational flexion continued.
- (b) Active quadriceps contraction continued.
- (c) Knee and hip flexion of both legs.
- (d) Active flexion of the knee.
- (e) Active flexion of the entire leg.

* From the Orthopedic Section, Army Air Forces, Regional and Convalescent Hospital, Coral Gables, Fla.

- (f) Gastrocnemius contraction and relaxation with plantar and dorsal flexion of the ankle.
- (g) Breathing exercises, raising extended arms overhead in supine position.
- (h) Sit-ups increased three to four times.

Fifth Day

- (a) Same as fourth day, with sit-ups increased again three to four times and gravitational flexion changed to mild forced flexion.

Sixth Day

- (a) Same as fifth day.

Seventh Day

- (a) Active knee flexion, bilateral, performed alternately.
- (b) Mild forced flexion of the knee.
- (c) Increased active leg flexion, bilateral, performed alternately.
- (d) Gastrocnemius contraction and relaxation with plantar and dorsal flexion of the ankle continued.
- (e) Raising of the legs at the hip with the feet together in supine position; then abducting the legs; then adducting the legs, and finishing with lowering of the legs. To be repeated until the patient is mildly tired.
- (f) Breathing exercises continued.
- (g) Sit-ups with increase in arithmetical rate.

Eighth Day

- (a) Same as seventh day.

Ninth Day

- (a) Same as seventh day.

Tenth Day

- (a) The sutures are removed.
- (b) The patient is permitted to walk (see discussion on walking under "comment").
- (c) Forced knee flexion, as forceful as necessary.
- (d) Active knee flexion continued.

Eleventh Day

- (a) Walking, with the instructor making corrections as necessary.
- (b) Forced knee flexion.
- (c) Active knee flexion continued.
- (d) Knee bends with the patient holding onto the bed, the number according to his ability.

Twelfth Day

- (a) Same as eleventh day with knee bends increased three to four times.

Thirteenth Day

- (a) Same as twelfth day.

Fourteenth Day

- (a) Same as twelfth day.

Fifteenth Day

- (a) Same as twelfth day.

Sixteenth to Twenty-Eighth Days

- (a) The patient participates in adaptive sports such as golf putting, shuffleboard, bicycling and walking. If the incision is completely healed, participation in swimming is urged. Dancing should be restricted to the slower and straight steps, such as are possible in the fox-trot. Activities involving sudden, irregular or twisting movements, such as tennis, handball, volleyball and golf, should be eliminated until the time when there is no doubt that the knee has returned completely to normal.

Comment

Normality in this discussion is considered to be:

- (a) knee flexion of 45 degrees;
- (b) knee extension of 180 degrees;
- (c) muscular strength in the region of the knee approximating that which the patient possessed prior to the injury;
- (d) appearance in walking similar to that which the patient possessed prior to the injury, and
- (e) absence of pain. It is apparent that the two important objectives of the program are: (1) range of motion, and (2) muscular strength.

The treatment for all patients is much the same during the period from the third to the ninth day. The amount of each exercise is based on the patient's ability and postoperative condition. A feeling of slight tiredness

on the part of the patient is the proper time to halt. When the patient becomes ambulatory, the daily program of exercises may be varied from the stated program according to the needs of the case. Flexibility in the ambulatory program at the discretion of the instructor is recommended.

A question frequently asked is whether the third postoperative day is too soon to start movement of the knee. The answer is in the negative and clinically is substantiated. To start movement on the third day is to insure the prevention of contracture of the soft tissues and of adhesions in the knee. It can be said that the period of the third to ninth days, when the patient is bedridden, is a crucial period, during which the soundness of the treatment assures the success of recovery. The program of treatment suggested has met that need at this installation.

If a physical therapy room is available, the patient should be sent there for treatment on about the tenth day. If a corrective exercise room is available, the patient should go there on about the twelfth day to take suitable exercises in bicycle, rowing and pulley therapy. This is in addition to the exercises suggested on the twelfth to the twenty-eight day in the program.

When the patient takes up walking on the tenth day, he is not to attempt to match the amount he did formerly. On the first day of walking he should attempt possibly five to ten minutes of walking with an accompanying rest period of at least thirty minutes. On the days following he may accordingly increase the walking time and decrease the resting time. It is a matter of adaptive progression.

When the patient starts to walk, faults may appear in his stride to mar its normal appearance. Careful observation and correction by the instructor as well as practice by the patient will correct the faults. Left to himself the patient is unaware of his walking defects, or, should he be aware, he usually does not know how to correct them by himself. So the trained eye and the knowledge of the instructor are necessary in identifying and correcting the incipient wrong habits.

The patient should also be acquainted with the fact that if he can walk, for example, only a total of fifty yards he should walk only half the distance from his resting place, so that he will have the strength to return. In addition, it is to be remembered that sustained long periods of standing during the first postoperative weeks are dangerous, with swelling and pain as the consequences. Thus the slogan is rest and walk, or stop and go.

Immediately after the operation the patient will have slight active movement in the quadriceps and very slow plantar and dorsal flexion of the ankle of the same leg. Strong active quadriceps movement will reappear by the seventh day, plus or minus two days for individual differences. Plantar and dorsal flexion of the angle will become progressively more agile and attain normality by about the fifth day, plus or minus two. With no complications a patient should have normal flexion and extension in the knee operated on by the fifteenth day. The rate of muscular recovery will lag behind; it approaches normality by the twenty-eighth day.

Fears in certain forms often appear in the patient. One arises when forced flexion is applied to the knee. The patient attempts to protect himself by contracting the quadriceps. Thus the instructor is working against the tightness in the knee plus the added force of the contraction of the quadriceps. The instructor should attempt to have the patient relax fully. His ingenuity in accomplishing this comes into play here, and if he is successful the problem will be easier and the patient's recovery quicker.

Another fear arises when the patient becomes ambulatory. Many patients are afraid that the knee operated on cannot bear the weight of the body and will hence favor it. This gives rise to limping, leg abduction in walking

and flexed knee walking. The patient is taught to walk correctly by being shown that it can be done. Once the patient sees that he can walk correctly the fear disappears. The patient may lapse back, but constant correction will finally channel him into walking properly without retrogression.

Some patients may need forced extension because prior to the operation the knee was held in a flexed position due to the displaced meniscus locking the knee and allowing the hamstring tendons to become shortened. Since this condition is not always present, forced extension has not been placed in the stated program. However, it is to be used when necessary and can be started as early as the third day after operation. Limitation of extension is also prevented by removing the pillow from beneath the knee on the fourth postoperative day.

It should be stated here that forced motion of the knee does not imply manipulation under anesthesia. Such is to be condemned. Forced motion means merely the gentle stretching of the joint by the instructor. Such motion produces pain to which all patients object. The alternatives in the situation are limitation of motion, absence of pain and prolonged hospitalization or temporary pain and a normal knee. Since normal persons desire normal knees, the pain should be given secondary consideration.

As in any program of physical reconditioning, a vital and integral part is played by the patient himself. An instructor can give the patient a thirty minute work-out, but this is not sufficient. The patient should be instructed to perform exercises periodically during the remainder of the day. Such exercises as active flexion of the knee, bilateral quadriceps contraction and dorsal and plantar flexion of the ankles should be done. Although most patients will not follow a rigid program of exercises, it is possible to gain the desired result through an informal schedule whereby the exercises are performed during odd periods of the day. On such a basis, the patient finds it easy and the results have been found satisfactory. The importance of this phase of the program should be emphasized and made clear to the patient.

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NEUROSYPHILIS WITH A THREE YEAR OBSERVATION OF THE COMPARATIVE THERAPEUTIC EFFECTS OF INOCULATION MALARIA AND ARTIFICIAL FEVER THERAPY *

VINCENT EDWARD LASCARA, M.D.

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Central State Hospital

PETERSBURG, VIRGINIA

"Know syphilis and all medicine will be opened to you," quoted from Sir William Osler. Paraphrasing his words to apply to central nervous system syphilis, we would have this maxim, know neurosyphilis and all clinical neurology will be opened to you. These phrases explain just why it is important for all physicians to accumulate all possible knowledge of this somatic disease that is far from being successfully controlled.

Syphilis is America's gift to the world. This disease appeared in Europe in the years immediately following the return of Columbus from his first voyage to America. It spread from Italy with the dispersal of the army of Charles VIII of France in the spring of 1495. The preponderance of evidence for the American origin of syphilis is overwhelming.

In the minds of many patients, a sense of shame, of extreme disgrace, accompanies the knowledge of infection with syphilis. The syphilitic feels himself outcast, unfit to associate with normal persons. His visit to the doctor may be the source of spiritual agony, to be carried out furtively and under cover, with coat collar turned up and hat pulled down. A genuine anxiety neurosis may develop. The physician may do much to alter his mental attitude to enable the patient to adjust himself to his misfortune. Preaching and moralizing are taboo. The patient needs a good psychological prescription. He must be made to realize that syphilis is a disease, not a sin; that the physician is interested in health, not in morals. The proper advice at the proper time should be given with full explanation as to the importance of the treatment, the reason why he should take his treatments as prescribed and to the complications that may develop should he not continue his treatment as scheduled. He should be instructed that if treatment is properly carried out, any of the normal relationships of life are possible, including marriage. The facts of infectiousness must be carefully explained. Psychotherapy is often as important as antisyphilitic treatment to gain the most success. Remember we treat not only the disease, but also the patient. To control the disease and its later complications, the education of the patient relative to the disease is an important factor.

Neurosyphilis

Neurosyphilis can be described as the result of the invasion of the tissues of the nervous system by the *Spirochaeta pallida*. From an anatomical standpoint, it may be divided into syphilis of the brain and that of the spinal cord. In this is included involvement of the blood vessels and meninges. Pathologically, neurosyphilis is divided into meningeal or inflammatory, and parenchymatous or degenerative. Pathological changes typical of syphilitic lesions in other parts of the body are also characterized in the nervous system.

* Reprinted Virginia M. Monthly 73:120 (March) 1946.

From the standpoint of the therapist a classification of neurosyphilis may be made on a combined clinical and anatomical basis.* This combination divides patients into four groups (table 1).

In the first three groups, the inflammatory element is predominant while in the last group degeneration is manifested. From this, it is plainly seen that the condition in which the parenchymatous lesions are predominant are the most resistant to the treatment instituted.

Types of Neurosyphilis

Dementia paralytica, also known as meningoencephalitic type or general paresis, was first recognized by Bayle as a clinical entity in 1822. The pathology as we know it today was described by Alzheimer and Nissl in 1904. It is a mental disorder characterized by an insidious onset of poor judgment, personality changes, and progressive dementia, accompanied by specific neurological abnormalities and as a rule leading to a fatal termination. This disease is said to be greater in men than in women, and in white than in colored. There is greater incidence of syphilis in the colored race. It was formerly believed that neurosyphilis was considerably more frequent in white than in Negro subjects. Over a period of five years, observation at our hospital (4000 colored inmates), there is evidence of increasing neurosyphilis in negroes which now almost equals the incidence in the white race. Observation at our hospital reveals the following: Percentage of first admissions with positive blood reaction for syphilis was 14 per cent, while neurosyphilis constituted 19 per cent of first admissions. The decreasing frequency of cutaneous lesions may explain the increasing incidence. Many observations have shown that the patient with florid secondary lesions seldom pre-

TABLE I.

Type of Pathological Involvement.	Stage of Infection.	Clinical Prototype.
Meningeal	Usually early; rarely after 4th year	Acute syphilitic meningitis, neuro-recurrence; early asymptomatic neurosyphilis.
Vascular	Rarely early; usually late	Hemiplegia; monoplegia; paraplegia; subarachnoid hemorrhage (cerebral or spinal cord thrombosis hemorrhage).
Mixed meningovascular	Late (3rd to 15th year)	Diffuse "cerebrospinal" syphilis; brain gumma; syphilitic epilepsy; Erb's spinal spastic paraplegia; cranial nerve palsies; basilar meningitis; late asymptomatic neurosyphilis.
Parenchymatous	Late (10th to 25th year)	Tabes dorsalis; general paresis; primary optic atrophy (as isolated lesion).

sents severe central nervous system lesions and vice versa. One reason why neurosyphilis may develop in cases with mild cutaneous lesions is that these patients do not know they have the disease; therefore, they are not treated for it, and as a result develop tertiary manifestations.

Moore estimates that 7 per cent of syphilitic patients develop dementia paralytica. This type of neurosyphilis imitates all forms of mental diseases and constitutes about 7 per cent to 10 per cent of the population of the mental hospitals in this country. These figures send out another plea for more spinal fluid examinations of syphilitics as a precaution to offset the full borne symptoms of psychosis later. Many a case of asymptomatic neurosyphilis could be discovered earlier, then proper therapy could be instituted so as to ward off the more destructive types. Paresis has its onset anywhere from five to twenty-five years following the initial infection, it occurs in the relative young

and in the middle age, and lately we have seen quite an incidence in patients between sixty to seventy with history of partial treatment, no treatment at all, and in cases discharged from clinics as "cured" of syphilis. It is known that the majority of the cases have their onset during the fourth and fifth decades.

The first changes seem to appear in the sphere of the intellect. Memory alteration is noticed, particularly for recent events, mental faculties are impaired, there is easy distractibility. Neurasthenic symptoms are commonly noted in the prodromal stage. Always suspect early paretic neurosyphilis in an individual who for the first time develops vertigo, headaches, loss of sleep and other neurasthenic symptoms during the fourth and fifth decades of life. The neurological signs may be evident at this time. As a rule the spinal fluid is positive before mental changes appear. But until these changes are revealed one is not justified in speaking of paresis. This type of neurosyphilis presents varied mental pictures: euphoria, grandiosity, manic, depressed and agitated, dementia, and rarely the picture of dementia precox. As the disease progresses, paretic convulsions occur and the picture of deterioration becomes more apparent. The terminal stage comes, complete invalidism sets in, and death is ushered in, usually with intercurrent bronchopneumonia or from a status of paretic convulsive seizures.

Most of the neurological signs encountered in cases of neurosyphilis may be observed in paresis: pupillary changes, irregularity, inequality, Argyll-Robertson pupils (fixed to light but not to accommodation). It is, however, not unusual to find the pupils normal in paresis. Tremor of the facial muscles, lips, of the protruded tongue and of the extended fingers is a very frequent early physical finding. Look for the ironed out faces (vacant expression). Slurring of speech is often found, difficulty lies in pronouncing consonants; test phrases such as "Methodist Episcopal," "ragged rascal," are used to demonstrate the speech defect. There is often impairment in hand-writing and manual dexterity. Tendon reflexes may be markedly exaggerated, diminished or absent, and at times normal. Convulsive attacks may occur.

The course of paresis has been altered by effective therapy in the last twenty years. Formerly it was almost invariably fatal. From the onset of definite mental symptoms the average span of life was two to two and one-half years. Remissions do occur, but usually are of short duration. The fatal prognosis of this disease has changed markedly since Wagner-Jauregg introduced fever therapy in 1918 and Lorenz introduced tryparsamide in 1923. More favorable promise yet is evident by the introduction of electropyraxia in the last decade. By means of the above therapies improvement can be obtained in 60 per cent to 70 per cent of the cases. Complete remissions occur in 30 per cent to 40 per cent, and in the latter group a return to useful healthy working capacity is achieved. This is a most economical asset in a serious disease that attempts to stricken its host both mentally and physically to complete incapacity.

Early diagnosis in paresis is of extreme importance. If one bears in mind that the clinical manifestation may simulate any form of normal disease, it follows that in every case in which there is a change of personality or the appearance of any psychotic manifestation, paresis must be ruled out. The early diagnosis is the one that counts. The examination of the cerebrospinal fluid is very important, as, in addition to mental symptoms, the final diagnosis of paresis must include the typical cerebrospinal fluid formula positive test for syphilis, increased globulin, increased cells and paretic curve.

Tabes dorsalis or locomotor ataxia is another chronic, usually progres-

sive form of neurosyphilis. It is primarily an affection of the spinal cord and spinal roots. About 5 per cent of untreated syphilitics develop tabes dorsalis. There is disturbance of coordination, pupillary changes, and root pains of varying distribution. It is thought that the primary locus of the disease is in the posterior roots. In the list of symptoms there is the ataxic gait, absence of reflexes (areflexia), hypotonus, disturbance of sensibility, trophic disorders, lightning pains, and visceral crises. The Argyll-Robertson pupil is the most characteristic sign; another is optic atrophy which is progressive and usually terminates in blindness. Extraocular palsies are found early—usually short in duration. Genital and sphincter changes are common. In the male, impotence is among the first signs. This disease makes itself manifest most commonly after the first decade of the syphilitic infection. The longer the incubation period, the more benign will be the course of tabes. After the fifth decade it is usually mild. Mental disorders do not, as a rule, occur in tabes and it is rare for a well established tabetic to develop paresis. When the parietic mental picture and a tabetic condition coexist the disease is called taboparesis.

Optic atrophy is not only just found as part of the clinical findings of tabes, but it may occur as the only sign of parenchymatous neurosyphilis; moreover, syphilis may cause atrophy of the optic nerve in several other ways. Intraocular inflammatory conditions, gumma, and pressure from syphilitic inflammatory products on the cerebral optic pathways may cause atrophy. On ophthalmoscopic examination the first change to appear in the retina is general pallor of the optic disc, the whole disc gradually becoming a chalk white with sharp defined borders. Tabetic optic atrophy is progressive; the other types respond readily to treatment. Approximately one-half of the cases of early optic atrophy, exclusive of tabetic type, may be arrested by prolonged use of chemotherapy and by electropexy.

Acute syphilitic meningomyelitis presents symptoms that are essentially those of transverse myelitis; prodromal symptoms of pain in the back usher in the disease, then there is rapid onset of paralysis or numbness of the extremities. Early anti-luetic treatment may give good results in these cases. Earlier the application of treatment, better the prognosis. Many authorities advocate the administration of anti-luetic treatment to all cases of transverse myelitis because there is a chance of its being of luetic origin. The chronic form is more resistant to treatment. Multiple sclerosis closely simulates the chronic form.

Syphilitic progressive muscular atrophy is a syphilitic endarteritis of branches of the anterior spinal arteries which supply the anterior horn cells. The disease has a subacute onset, and runs a progressive course. The flaccid atrophy is preceded by symptoms of paralysis or weakness. The involvement strikes the shoulder girdle; eventually the forearm and hands show the atrophy, while at times the hands show the atrophy first. The slow progression from the distal portions of the extremities toward the shoulder girdle as seen in non-specific progressive muscular atrophy is not usually seen in the syphilitic disease. The syphilitic form responds readily to anti-luetic treatment; therefore, it is safe to say that the prognosis is much better than in the non-specific muscular atrophies.

The clinical picture of syphilitic amyotrophic lateral sclerosis is in every way similar to that of the non-specific amyotrophic lateral sclerosis. The classical signs are weakness and muscular atrophy with fibrillations in the upper extremities and spasticity of the legs with hyperactive reflexes and usually the sign of Babinski. Sensory changes are not present; the changes are produced in the gray matter of the cord and brain. The disease responds

to intensive antiluetic therapy. The non-specific form is progressive and doesn't respond to treatment.

Combined systemic disease is clinically identical with that of pernicious anemia. The differential diagnosis depends upon the finding of a positive Wassermann, Kahn, or Kolmer reaction. The prognosis depends upon the early institution of antiluetic therapy and also upon the severity of the involvement of the cord.

Syphilitic pachymeningitis affects the cervical portion of the cord, and resembles syringomyelia. Wasting of the upper limbs occurs with loss of sensation down to a certain level. Pain in the arms is the chief complaint. Response to therapy is not satisfactory.

Gumma is only mentioned as a rarity in the spinal cord. When found in the cerebrum, gummas are usually associated with the meninges. Gumma is the rarest of the neurological findings of syphilis.

Vascular neurosyphilis is an intense panarteritis of the large and medium-sized pial vessels usually at the base of the brain. Blood supply is inadequate and produces perivascular atrophies and softenings. The Wassermann reactions of the blood and spinal fluid may be negative; few lymphocytes are found and usually there is a weakly positive globulin reaction. Vascular accidents on a luetic basis are usually found in young adults under forty-five years of age without renal or cardiac disease. In this age group, syphilis is the most common cause of cerebral vascular disease. In this condition treatment must be used cautiously. The damaged part of the brain will not regain function.

What properly comes under the label of cerebrospinal syphilis is a dispute; symptoms vary. The term meningo-vascular neurosyphilis is more applicable. There are combinations of diffuse cerebral damage with convulsive seizures, and mental changes as also focal softenings are associated with various cranial nerve palsies. Response to therapy is more favorable than in the parenchymatous forms.

Acute syphilitic meningitis is relatively rare.

Asymptomatic neurosyphilis is the condition in which therapy is of greatest usefulness, and in this condition lies the prophylaxis of all clinical neurosyphilis. Spontaneous return to normal of positive cerebrospinal fluid findings is extremely rare, and the prognosis depends a great deal on treatment. Early or late in the disease patients with syphilis may show persistent abnormalities of the cerebrospinal fluid without clinical signs of involvement of the nervous system. These cases represent the precursors of clinical neurosyphilis. A negative spinal fluid in early or late syphilis is a practical guarantee against the development of neurosyphilis. Spinal fluid examination is therefore highly essential towards a successful result of discovering potential neurosyphilis. It has been estimated that some thirty per cent of syphilitic patients without clinical symptoms of neurosyphilis show abnormalities in the cerebrospinal fluid. If allowed to go untreated they will eventually show clinical signs of neurosyphilis. In order to prevent serious neurosyphilis from appearing many years after the patient has considered himself well, it is the duty of the physician to make methodical examination of the cerebrospinal fluid even when the patient is free from nervous involvement. If ordinary antiluetic regime is not successful, then call on artificial fever and tryparsamide.

Congenital neurosyphilis or juvenile paresis is much more resistant to therapy than the acquired form; juvenile paresis is not a common finding. Many syphilitic children die from a fulminating paresis. The best treatment of congenital neurosyphilis consists in the prevention of the disease by pre-natal treatment of the mother.

There are a number of neurological disorders which may be confusing in the diagnosis of neurosyphilis, namely:

General Paresis with:

Psychoneurosis.
Cerebral arteriosclerosis.
Manic depressive psychosis.
Chronic alcoholism.
Dementia precox.
Encephalitis.
Brain tumor (frontal lobe).
Epilepsy.
Lead encephalopathy.

Tabes Dorsalis with:

Tumors or chronic sclerosis of posterior columns.
Subacute combined sclerosis.
Brain tumor (optic atrophy).
Hypertrophic arthritis (Charcot's joint).
Syringomyelia (Charcot's joint).

Late Meningo-Vascular Neurosyphilis with:

Cerebral arteriosclerosis.
Peripheral neuritis.
Combined sclerosis (pernicious anemia).
Acute or chronic anterior poliomyelitis.
Disseminated sclerosis.
Brain tumor.
Amytrophic lateral sclerosis.
Syringomyelia.
Bell's palsy.
Cord tumor.
Chronic alcoholism.
Cerebral vascular accident.
Paralysis agitans.
Epilepsy.

Acute syphilitic meningitis with:

Tuberculous meningitis.
Brain tumor.
Brain abscess.
Acute infectious meningitis.

Before discussing the prophylaxis of neurosyphilis, the indications for cerebrospinal fluid examination are given below:

1. Spinal puncture should be done about one year after beginning of treatment in early syphilis or near completion of treatment; a highly important procedure in the prophylaxis of possible neurosyphilis.

2. When dealing with a serologic fastness after six months of adequate therapy, suspect neurosyphilis; spinal puncture is indicated.

3. In event of a sero relapse in any case of early syphilis, though a previous spinal fluid examination proved negative, it is imperative to do another examination.

4. Spinal fluid re-examination should be carried out in the presence of persistent serological fastness in early syphilis on probation after treatment.

5. Spinal fluid examination should be done in every case of late syphilis unless some contra-indication exists, such as heart disease with poor prognosis.

6. To manage neurosyphilis, whether it be asymptomatic or symptomatic, it is imperative to do repeated spinal fluid examinations to evaluate the course of therapy.

Prophylaxis of Neurosyphilis

Neurosyphilis in part is preventable; among recognized syphilitics the 25 per cent expectancy of its development in untreated patients may be reduced by means of routine spinal fluid study, appropriate intensification of treatment in those patients with abnormal fluids in either early or late syphilis, and the use of fever therapy in patients who are serologically resistant to other measures, to a probable 5 per cent or less. The chance of "curing" clinical neurosyphilis once it has developed, or even of obtaining complete symptomatic relief, is not nearly so great as this. The saying "An ounce of prevention is worth a pound of cure," is applicable to neurosyphilis.

There is an unfortunate barrier in many neurosyphilitic patients; it is impossible to apply the prophylactic effect of treatment because the patient is unaware of his infection until neurological symptoms appear. The majority of patients with these grave forms of neurological involvement can give no history of obvious early or late lesions of syphilis and they are totally unaware of the fact that they are infected until disaster overtakes them. It is the infected, but unrecognized syphilitic who is the huge and nearly untouchable reservoir of neurosyphilis. The only solution is the determined effort by physicians to recognize syphilis by means of routine serological tests of patients reporting for any medical complaint, and particularly by means of the examination of patients known to be infected. When the serological test is positive for syphilis a follow-up with a study of the cerebrospinal fluid will reveal the possible liability to neurosyphilis.

The examination of families of neurosyphilitic patients is another essential procedure. There is clinical evidence pointing to a neurotrophic strain of treponema. It was long ago known that several individuals infected from a single source might all develop neurosyphilis. The married partners, husband or wife, of patients with tabes or paresis are found twice as liable to suffer from neurosyphilis as an unselected group of syphilitics.

Examination of the husband or wife of a neurosyphilitic patient should constitute a serological test, a careful physical and neurological examination, and should there be the slightest suggestion of neurological abnormality, routine study should be made of the cerebrospinal fluid even if the blood was found negative. Moore found in wives of four parietic patients positive spinal fluids when all other examinations revealed nothing. Routine lumbar puncture is not necessary in the children of neurosyphilitic parents unless there is clinical evidence of congenital syphilis or a positive serological test is present.

Prognosis of Syphilis

A short discussion of the prognosis of syphilis will be appropriate before considering that of neurosyphilis. Syphilis ranks with cancer, tuberculosis, and pneumonia as one of the four killing diseases. It imposes an added risk of death as compared with non-syphilitic individuals. Statistics reveal that one of every three syphilitics dies as a direct or indirect cause of this disease. The life expectancy of white males between the ages of thirty and sixty is shortened by 17 per cent and in the negro males of the same age by 30 per cent.

Too much interest is displayed in prognosticating from a serological standpoint. The physician who insists on the serological standpoint in viewing his patient will find himself in serious difficulties.

Central nervous syphilis and cardiovascular type are the major causes of adult deaths if improperly executed from the initial infection. A small amount of treatment in early syphilis is worse than none; it interferes with

the body's own defensive mechanism; it often fails to eliminate the infection. The natural specific resistance of the disease is interfered with and therefore the barrier against the more serious complications crumbles, and the spirochaete invader assembles his forces to strike his foe later with full power so as to render his foe weak mentally and physically, hoping to make his attack vulnerable.

The prognosis of neurosyphilis depends largely on the type of involvement present. It is always serious so far as the persistence of disagreeable or even crippling symptoms are concerned. In the case of paresis it constitutes a grave danger of life. Without treatment there are infrequent remissions, 3 per cent to 5 per cent, and these are only at short duration. In the large majority there is steady down hill progression with death following the onset of symptoms in an average of two years—exceptionally, five years or longer.

With routine antiluetic treatment this gloomy outlook is not appreciably bettered. The duration of life is not markedly improved. However, with fever treatment there is a different picture. Complete remissions occur in 30 per cent to 40 per cent of unselected cases, and much better results in carefully chosen cases. Remissions with this non-specific therapy are in terms of years. Many cases show permanent "arrest" or even "cure" of the parietic process. Incomplete remissions of benefit from an institutional standpoint in the transfiguration of bed-ridden "wrecks" to relatively useful hospital inmates are also obtained in a high per cent of cases.

Tryparsamide in Neurosyphilis

This drug has a high arsenic content (25 per cent). There is no evidence of cumulative toxic effect. In man there is a remarkable stimulative effect, evidenced chiefly by a prompt gain in weight and improvement in general appearance and activity. Tryparasamide possesses a high therapeutic tissue penetrability. Lorenz and his associates first used this drug in the treatment of neurosyphilis. The first great effect of the drug is usually a gain in weight and improvement in general physical status of the patient. In paresis remissions occur in about 30 per cent of the patients treated; in tabes and meningo-vascular neurosyphilis, symptomatic improvement is often prompt and satisfying. Except in neurosyphilis, however, the drug is without apparent benefit and should not be used. The serological results from tryparasamide are much less striking than clinical results. There is little or no effect on the serological tests of the blood. Excess cells and protein in the spinal fluid usually disappear promptly. Wassermann or Kolmer and colloidal curves are reduced to negative in a fair proportion of patients with meningo-vascular neuropsychilis, less frequently in tabes and paresis.

In paresis it is an ideal follow-up treatment after fever therapy; always employ first when possible. In other forms of neurosyphilis it is the best custom to try other arsenicals and heavy metals for about six months. If improvement from the preliminary period is not definite, tryparasamide is used in almost all patients.

The average therapeutic maximum dose is three grams intravenously. A minimum course consists of twelve weekly injections. Stokes, Solomon and Moore gave as many as one hundred consecutive weekly injections as a minimum; it is productive of much better results than a short trial. If clinical improvement is to be expected, it will occur in three or four months, but to obtain lasting serologic improvement in the spinal fluid, years of treatment may be necessary.

The only contra-indication to the drug is the possibility of partial optic atrophy. It may cause nitritoid reactions and gastro-intestinal upsets. There is rare occurrence of convulsions, coma, and visual hallucinations. In most instances, adequate preparation with heavy metals and iodides prevents the occurrence of these reactions. The cause of the increased toxicity of the drug in recent years is unknown. Moore suggests that it may be due to undetected impurities of chemicals used in its manufacture. Visual damage is the main complication to be feared. Out of 2,087 cases analyzed by Sloan and Woods at Johns Hopkins, only 5.12 per cent developed subjective reactions and 3.4 per cent objective reactions. These did not have pre-existing optic nerve damage.

Non-Specific Fever Therapy in Neuropsychilis

Sydenham once said, "Fever is a mighty engine which nature brings into the world for the conquest of her enemies." It has an important role in the therapeutic effect it displays in fighting against the spirochaetal foe that is attempting to destroy the cerebration of the neurosyphilitic. Full credit is due Wagner von Jauregg for the introduction of this effective method into syphilotherapy. After many trials with various inoculations, finally in 1917 he hit upon the idea of inoculating paretic patients with tertian malaria. Fever therapy in neurosyphilis has opened a promising progressive development of the therapeutics of the neurosyphilitic.

There are three main types of fever therapy:

I. Malaria

1. Tertian
2. Quartan

II. Mechanical Fever

1. Air conditioning
2. Electropyrexia (diathermy, short wave radio)

III. Protein fever

1. Typhoid vaccine

Indications for fever therapy:

- Paresis
- Tabo-paresis
- Primary optic atrophy.

Postponement of fever therapy in favor of trial of other methods is to invite progressive mental deterioration, death or blindness. It is always well to remember that paresis and primary optic atrophy are such helpless diseases that it pays to take risks with fever therapy since it has proven of such great merit. In the other forms of neurosyphilis a year at least of preliminary treatment with the trivalent arsenical drugs and heavy metals, then tryparsamide should be tried before fever therapy is advised. I believe that in the case of patients with late syphilis, and especially those with the paretic formula in the cerebrospinal fluid, much will be accomplished with fever combined with chemotherapy plus a subsequent twelve or eighteen months of chemotherapeutic treatment as compared to chemotherapy alone.

In any case the patient's general physical condition should be good. Advanced age, marked malnutrition, active pulmonary tuberculosis, obesity, and aortic aneurysm are temporary or permanent contraindications. Syphilitic aortitis is not a contraindication even in the presence of a compensated aortic regurgitation, though, such patients require special cardiac supervision during treatment. The relative safety of electropyrexia over malaria has proved

itself safe even in some of the above cases. Malaria is only for the young and strong.

At our hospital inoculation malaria, the Kettering hypertherm, and the inductotherm, are used to induce fever in neurosyphilis. The procedure of each type of therapy will be given, then finally the results of a comparative study of the therapeutic effects of each method will be discussed.

Fever by Induced Malaria

Tertian malaria is the infection of choice in this form of fever therapy. Its clinical manifestations are less severe and more controllable with quinine. Our institution, being for colored patients, quartan type is used, since the colored race is immune to the tertian type. The direct patient to patient transfer is used in our inoculations. I find that about 7 per cent to 10 per cent of our patients are refractory to the quartan type of infection. Several observers (Branche, Knoll and Fong) have reported satisfactory results with the quartan malaria, even in white patients. Mays, Oden, and Cox think that in the treatment of general paresis it is superior to tertian malaria.

The technic of inoculation:

Although other routes of inoculation can be used, the intravenous route is used. The amount of inoculum used is 10 cc. of whole blood from a patient running a course of inoculation malaria. Since the donor and recipient are usually nearby, whole blood minus citrate is used. At times it is necessary to use citrate, 1 cc. of 2.5 per cent for each 10 cc. of blood that is employed; this does not impair the vitality of the plasmodium. If for any reason the citrated blood is not to be used immediately, it is suitable for inoculation within a twelve to forty-eight hour period if kept in an ice box, cool room, or incubator.

Incubation period of tertian malaria is one to fourteen days (average six days); quartan ten to sixty days (average twenty-one days). During the incubation period patient is allowed to be ambulatory; temperature is checked every four hours while awake. When temperature reaches 101 degrees Fahrenheit, the patient is ordered to bed for further therapy. Vitamins plus iron are given orally three times a day from the day the patient is inoculated.

Routine while running malaria:

1. Complete bed rest.
2. T. P. R. every three hours while awake.
3. For temperature 106 degrees, tepid sponges.
4. Blood pressure checked morning and evening.
5. Close observation made for possible complications.
6. Analgesics and sedatives are given p.r.n. for discomfort.
7. Sodium chloride four grams daily is given to replace lost chlorides from diaphoresis.
8. Urine is examined every three days.
9. Hemoglobin and red blood count determination is made every fifth day.
10. N.P.N. determination every five to seven days.
11. Fluids are given freely.
12. Thiamine hydrochloride and ferrous sulphate three times a day.

Patient is allowed to run ten to twelve paroxysms. The malaria is then terminated by giving quinine, grains ten, three times a day for a week; then grains five for another ten days. Bed rest is prolonged ten days after the last febrile paroxysm. Physical activity is gradually resumed over a three or four week period.

Follow up with chemotherapy: Five days after the last paroxysm the patient is started on chemotherapy weekly, usually started on tryparasamide one or two grams dosage, or mapharsen .06 gram. Eleven treatments are given in each course, alternating between tryparasamide, bismuth and mapharsen with no interruption of therapy. The majority of our patients receive saturated potassium iodide orally ten to fifteen drops, three times a day after meals daily for six months. Treatment is continued from three to five years. Blood and spinal fluid checks are made every six months.

There have been numerous hypotheses presented as to the *modus operandi* of induced malaria. It appears that, since the introduction of artificial fever, comparisons have shown that malaria's therapeutic effectiveness is more or less a foreign protein reaction and it is the fever induction that gives the results rather than the specificity of the malaria.

Artificial Fever Therapy

In 1929, Neymann and Osborne introduced artificial fever therapy with high frequency currents, the beginning of another era in the treatment of neurosyphilis, the Artificial Fever Period. In the treatment of neurosyphilis, we have had three periods: 1. Chemotherapy, 2. Period of Malarial Therapy, and 3. Period of Artificial Fever Therapy.

Electropyrexia: Blood chlorides and N.P.N. are not disturbed to a point of danger by this method of therapy. Precautions are taken by giving sufficient sodium chloride, with water before, during, and after the fever treatment.

Technic of artificial fever treatment at our hospital:

1. All patients receive grs. 1 ss of nicotine acid daily throughout the entire course of twelve weeks of therapy.
2. The fever therapy consists of five hour sessions of fever weekly, maximum temperature 104 to 105 degrees, maintained at the maximum temperature two and one-half to three hours.
3. Physical check-up is made twelve hours before therapy. Bismuth 2 cc. is given intramuscularly, if on combined chemotherapy, prior to each fever session.
4. Urinalysis check before therapy.
5. Calcium phosphate grs. xv, three times one day orally, forty-eight hours before each treatment.
6. 1000 cc. of 5 per cent glucose in saline with 1 cc. thiamine hydrochloride is given intravenously prior to going for electropyrexia.
7. S.S. enema night before treatment and morning of treatment.
8. Urinary bladder is checked before patient leaves ward.
9. Disturbed patients receive codeine grs. ss hypodermically before therapy.
10. After the initial hour of the therapy the patient is encouraged to drink fruit juices and water, chilled, but not iced.
11. If patient becomes too restless, codeine grs. $\frac{1}{4}$ or grs. ss is given, if necessary.
12. If combined chemotherapy is used, .06 grams mapharsen, or one or two grams of tryparasamide, is given intravenously when fever reaches the vicinity of 104 degrees, feeling that the permeability of the drug is greater at the maximum temperature, and thus more efficacious, and the relative toxicity is diminished or minimized.
13. In the last half hour of the therapy 1000 cc. of saline is given intravenously with 10 cc. of calcium gluconate; the latter is given to avoid any tetany, and the former as a measure to replace salt lost by diaphoresis during the therapy.

14. Patient is watched carefully. Pulse and respiration checked every half hour.

The patient is removed from the fever cabinet for any of the following reasons:

1. If he becomes unconscious at any phase.
2. If there is a sudden drop of blood pressure and if there are symptoms warning of possible cardiovascular collapse.
3. Cramps of various muscles, not seen by me, prevented by proper chloride intake prior to treatment and before completion of treatment.
4. Pulmonary edema—rare. Treatment, venesection 500 cc. blood.
5. Cerebral edema is another rarity; treatment, spinal puncture.

A three year observation has been made of 190 cases of paresis treated at our hospital with inoculation malaria and artificial fever therapy. The majority of cases treated presented intermediate signs and symptoms; only forty cases presented severe signs and symptoms; of this number ten were treated with therapeutic malaria; mild cases were in the minority, composing only twenty-five patients. In all cases showing remission, the blood serology and parietic formula were definitely reduced; complete reversal was greater in those cases treated with artificial fever concomitant with chemotherapy. Intensive chemotherapy, subsequent to fever therapy, is an essential requirement for sustained optimum results. The average age of patients treated was 40.1 years. The table below gives the comparative results of the two forms of fever therapy.

TABLE II. — *Dementia Paralytica: Types of Treatment and Clinical Results — Two-Year Treatment Observation.*

Clinical Status	Artificial Fever		Therapeutic Malaria	
	No. of Cases	Percentage Approx.	No. of Cases	Percentage Approx.
Remission	65	64%	30	33%
Improved	21	20%	13	15%
Remission and improved.....	86	84%	43	48%
Unimproved	13	13%	25	30%
Died within 3 months of treatment	3	3%	20	22%
Total	102	100%	88	100%

Remission: In this class I have included all cases considered as socially recovered, able to function mentally and physically in society and able to return to work.

Improved: In this class the patient's mental and physical status is so benefited that they show good adaptation to the hospital environment; these are allowed ground parole and are able to work under supervision on the hospital grounds.

Unimproved: Under this class are classified those patients who remained stationary for a long time following therapy, and subsequent chemotherapy, but have become less burdensome; at least the stormy phase has subsided.

Summary and Conclusions

1. The pathogenesis, symptoms, prophylaxis, prognosis, and treatment of the various types of neurosyphilis have been presented with a comparative observation of malarial and artificial fever therapy.

2. Neurosyphilis is a serious complication of syphilis. It accounts for approximately 45 per cent of the deaths directly due to syphilis. The foundation for all types of neurosyphilis is laid down during the early months

of the infection, at the time of generalization of the causative organism.

3. Many a syphilitic could be spared mental invalidism through a study of the cerebrospinal fluid at more frequent intervals during the course of his disease.

4. A positive blood test should always be followed by a study of the cerebrospinal fluid.

5. Paresis, taboparesis and primary optic atrophy are imperative indications for the use of fever. In other forms of neurosyphilis, reserve it to be used only if chemotherapy fails to give improvement or prolonged sero resistance exists.

6. The persistent claim that the malaria plasmodium exerts a specific beneficial influence in cases of neurosyphilis, apart from the production of fever, has little justification in the light of development of the past decade.

7. Artificial fever therapy is the treatment of choice because: (a) The patients tolerate artificial fever therapy more readily; (b) Patients can be treated on an ambulatory basis; (c) Treatment complications are minimized; (d) The risks of inoculating an already ill patient with another infectious disease (malaria) are eliminated.

8. Artificial fever therapy combined with chemotherapy is the treatment of choice. Observation with mapharsen offers promising results.

9. The patient receiving combined artificial fever therapy with chemotherapy shows increasing physical restoration in contrast to the malarial patient whose body resources are torn down by the added disease.

10. Lastly, the best treatment of neurosyphilis, after all, is its prevention through the adequate treatment of early syphilis. Unless the physician fails to evaluate the possibility of this complication, it is certain that the manifold problems of neurosyphilis will continue to arise.

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Therapeutic Quartan Malaria in the Therapy of Neurosyphilis Among Negroes, *Am. J. Syph., Gonorr. & Ven. Dis.* **24**:133, 1940.
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GRAPHIC METHOD FOR RAPID ESTIMATION OF CLINICAL STATUS IN POLIOMYELITIS *

EDWIN T. WILLIAMS, M.D.

FRANKLIN T. TOP, M.D.

and

LOUISE SUCHOMEL, B.S.

DETROIT, MICHIGAN

In 1943 a decision was made to give the Kenny method of treatment of infantile paralysis a complete trial without modifications. The decision was prompted at first because of interest in the possible effects on the patients and secondly because public demand made use of the Kenny method well nigh mandatory. Finally, our interest was intensified after we had made personal visits to the Kenny Institute in Minneapolis and observed the results obtained.

The value of a method can be assessed only if proper records are kept of the patient's status from time to time. The following plan was formulated and put into force. On the admission of each patient with infantile paralysis, a full time staff physician attempted as accurate an estimation as possible of the patient's muscular involvement. The patient was seen at the same time or on the following day by a well trained nurse-physical therapy technician who had been in orthopedic work for four years and had been trained in the Kenny method at the Kenny Institute. The status of the patient was reevaluated at frequent intervals in the early stage of the disease and thereafter as indicated, particularly when there was marked involvement requiring months of hospitalization. At first the results of repeat examinations were written out in detail. It soon became apparent that this was too time consuming with reference both to the recording and to the comparison of initial and subsequent findings.

For clinical purposes the regular physical therapy sheets, listing the muscles of the body in the center of a page, with vertical columns to the right and left for recording positive and negative findings, does not lend itself to a rapid evaluation of the patient's over-all status by the regular medically trained person. Ideally, a new method should show at a glance the degree of spasm, weakness or paralysis of a muscle or group of muscles and if possible their anatomic relationship. Bennett¹ found it necessary to make a special chart to record the findings of a poliomyelitis patient in the acute stage. His chart is essentially the same as a regular physical therapy chart, except that the muscles are grouped as prime movers. Vertical columns remain for recording degrees of passive and active motion and of incoordination. McFarland and Graves² devised a scheme for recording degrees of spasms or limitation of various groups of muscles to passive motion. The scheme to be described hereafter is essentially the same method of evaluating spasm, but the abnormal findings have been classified into two categories instead of four. The system was evolved after numerous trials and modifications. It is not intended to replace or to be a substitute for the detailed analysis of the physical therapist. It does, however, give in a graphic way a three dimension "motion" picture of a patient at any stage of the disease.

The scheme is to place on a simple line body figure, a "stick figure"

* From the Communicable Disease Division, Herman Kiefer Hospital, Detroit, Michigan.

1. Bennett, Robert L.: Arch. Phys. Therapy 24:453, 1943.

2. McFarland, J. Wayne, and Graves, Dorothy A.: Arch. Phys. Therapy 25:553, 1944.

(fig. 1), red and blue notation lines indicating opposing prime muscle groups and occasionally specific muscle involvement. The easiest and simplest way is to draw the "stick figure" free hand about 2½ inches tall with black ink. The findings are recorded in two colors to aid in a quick differentiation of involvement. Thus special forms are not required, though mimeographed sheets of the stick figures can be used or even a rubber stamp if desired. The legend for the rapid clinical evaluation of muscles is as follows:

Passive Motion. —

1. *Red solid line:* Severe spasm or shortening allowing half or less of the usual range of lengthening on passive motion of a particular muscle or group according to the age of the patient.

2. *Blue solid line:* Mild to moderate spasm or shortening allowing more than half but not normal or full lengthening on passive motion of a particular muscle or group according to the age of the patient.

Active Motion. —

1. *Red dash:* Alienation or apparent paralysis on attempted active motion of a particular muscle or group of muscles (0 per cent).

2. *Red plus:* A muscle or muscle group showing only a flicker of activity or one that is still so weak that it is unable to function unless the pull of gravity is removed (5 to 40 per cent).

3. *Blue dash:* A muscle or muscle group which will pull against gravity with a minimum of resistance and tires after three to six movements (40 to 60 per cent).

4. *Blue plus:* A muscle or muscle group which pulls against gravity and resistance but still shows definite weakness (60 to 90 per cent).

5. Normal muscles are not represented. Significance is not attached to the number of dashes or pluses but only to the kind and color of the symbol.

This division of muscle involvement in poliomyelitis is somewhat similar to that recently reported by McIntosh and associates.³ Their classification is as follows:

No symbol: "5. Normal—no apparent deficiency."

Blue plus: "4. Good—approximate normal but fatigues more readily."

Blue dash: "3. Fair—part can perform function against gravity but is definitely weak."

Red plus: { "2. Poor—muscle is so weakened that it cannot perform its function against gravity, but with removal of gravity can function."
"1. Trace—there is slight contractility of the muscle."

Red dash: "0. Zero—no evidence of contractility of muscle fibers."

The interest in this analysis lies entirely in the weakened muscle. After observing a good number of poliomyelitis patients we cannot help feeling that a shortened muscle or muscles in spasm should be considered regardless of the cause of this finding.

In order to illustrate the application of our scheme of recording, the first three figures are taken from the records of several patients to show how involvement of muscles may be represented. If the broken lines of figure 2A were removed along with the solid blue lines for the quadriceps, one would have a picture representing about 40 to 50 per cent of patients on admission to hospital, for nearly all patients show some degree of spasm or shortening of the neck, back and hamstring muscles at some time in the acute phase of the disease. A patient with the preparalytic type of poliomyelitis could not have his neck flexed 45 degrees (red solid line) without pain. It would be impossible to set him upright with knees over the edge of the table (red solid line) without causing him discomfort. Discomfort would be elicited in the hamstring region on passive straight leg raising after the extremity was lifted beyond 45 degrees (blue solid line) but before it reached 90 degrees if the patient was a child. Normal range, however, takes into consideration the age and build of the patient and not a specific degree.

3. McIntosh, Rustin, and others: J. A. M. A. 128:21, 1945.

Figure 2A represents an 11 year old white boy who on admission had a fixed soft palate, mucus in his throat, difficulty in swallowing with regurgitation of fluid through his nose and a nasal tone to his voice (red dashes through head). There were marked rigidity of the neck and back on attempts to flex them passively (red solid line) and some pain in the hamstring group before they reached their normal range on straight leg raising (blue solid line). Pain appeared in the quadriceps before the heel reached the buttocks on knee flexion with the patient in a back-lying position. He could raise his head from the stretcher well but could not take much resistance (blue plus).

Figure 2B represents the stage of involvement of a 17 year old white girl after she had been in the hospital for two months. There were still pain and limitation of forward flexion of the lumbar region of the back (blue solid line). There was still marked tenderness in the hamstring and gastrocnemius muscles on passive movement of these muscles. The patient had to keep her knees flexed by aid of some support under them, such as a rolled towel. Her feet were still somewhat plantar-flexed owing to marked spasm of the gastrocnemius (red solid line). There was some limitation of abduction on passive motion before the usual 65 degrees from the midline was reached (blue solid line). Except for the dorsiflexors of the left foot and the left psoas muscle, all the muscles of the lower extremity could take varying degrees of resistance in addition to gravity (blue plus), but they were not of normal strength. This represented considerable improvement for the left quadriceps, dorsiflexors of left foot, toe flexors, adductors and external rotators of the left thigh and abductors and adductors of the right thigh, all of which had been unable to pull any more than just against gravity (blue dash) the month before.

Figure 3A shows the findings in a respirator case. The patient was a 20 year old white girl who became ill two days before admission. The figure represents her physical findings one month after admission. She had mild spasm (blue solid line) on passive motion of the neck, resistance to external rotation of both shoulders and inability to extend the right arm fully owing to spasm of the right biceps muscle. There was severe spasm (red solid line) in the pectorals of both shoulders, the erector spinae group of muscles of the back and lumbar area and the hamstrings of both thighs. No function was seen in any of the following muscles (red dash) on attempted active motion: the left deltoid, right triceps and pectoral, internal rotator of right shoulder, external rotator of the left shoulder and teres major of both shoulders.⁴ Some activity but no pull against gravity (red plus) was found in both coracobrachialis muscles and the right rhomboid muscle. The right deltoid could raise the arm against gravity but not against resistance (blue dash). There was a like amount of strength in the right biceps, left rhomboids, intercostal muscles, external rotators of the right shoulder and internal rotators of the left shoulder. Weakness was found in certain muscles, but they had sufficient strength to pull against gravity and against some resistance (blue plus). This condition existed in the sternocleidomastoid, all muscles of the left upper extremity and those of the right wrist, hand and fingers. The same relative power was present in the iliopsoas, quadriceps and gluteus maximus muscles of both thighs and the hamstrings of the left thigh.

Figure 3B does not represent any patient but depicts the manner in which other muscles may be indicated. For mere record's sake the weakness of

4. When certain important muscles are involved which cannot be conveniently represented on the "stick figure" without causing confusion, they are listed separately beside the figure with the appropriate code marks to the right or left as on the figure itself.

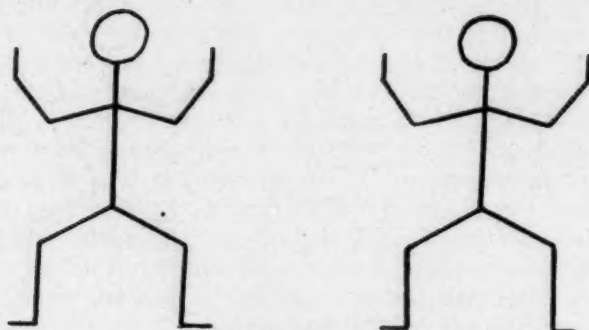


Figure 1.

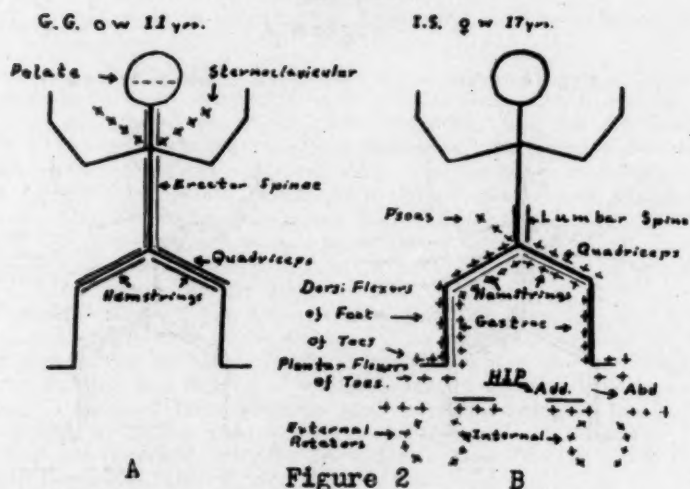


Figure 2

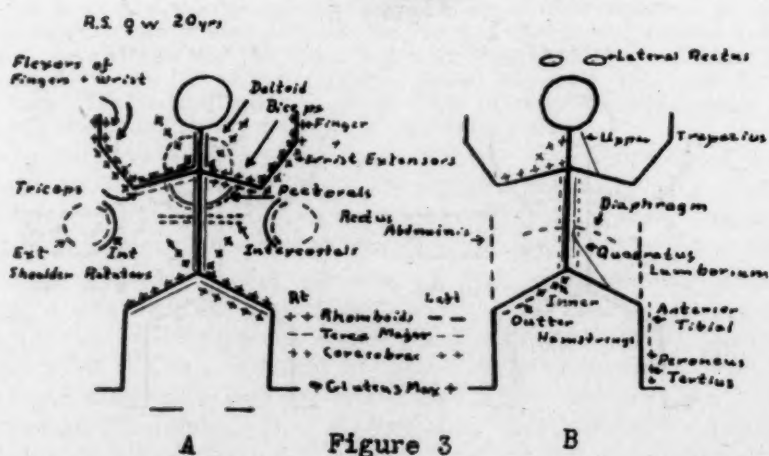
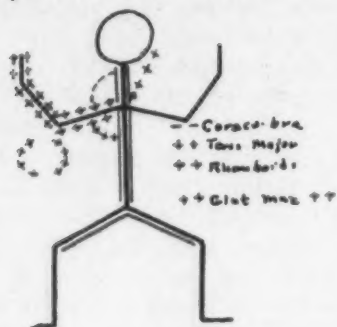


Figure 3

HM 9w 21 yrs 10-14-44



10-22-44 (9)

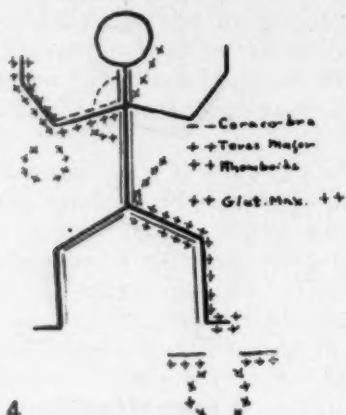


Figure 4

11-8-44 (26)



12-8-44 (36)

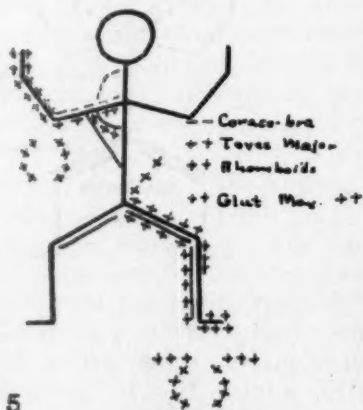
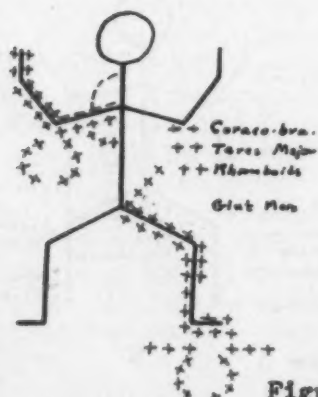


Figure 5

1-16-45 (98)



3-6-45 (144)

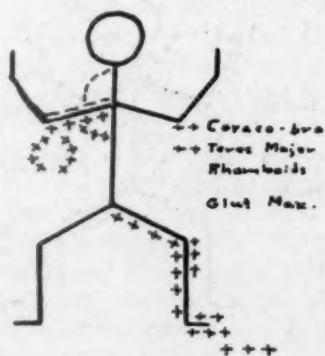


Figure 6

the lateral rectus of the left eye was easily indicated by showing the pupil of that eye off center toward the medial side. The left upper trapezius might be markedly shortened and pulling that shoulder upward. The right deltoid and biceps of the right shoulder are shown having some activity but unable to pull against gravity (red plus). Marked spasm of the erector spinae group and lack of any active motion of that group are represented by the red solid line and red dashes adjacent to the midline. The abdominal muscles are indicated by symbols in a vertical line at a distance from the center in order to be out of the way of other possible markings. If the diaphragm is found by fluoroscopy to be not functioning at all, this is indicated by a curved line of red dashes across the middle of the "stick figure." Should there be marked spasm of the left quadratus lumborum muscle, causing apparent shortening of the left leg, it would be indicated by a red solid line, as seen on the figure, since no provision is made for the width of the pelvis. When there is a difference in the strength of the internal and external hamstrings of the thigh and of the dorsiflexors of the foot the symbols may be divided as shown on the figure.

Figures 4, 5 and 6 show the actual operation of the scheme in one of our cases.

The patient was a 21 year old white student nurse whose history, physical findings and spinal fluid findings were compatible with poliomyelitis. On admission weakness was present in all muscles of the right upper extremity and the left sternocleidomastoid muscle. The following morning the patient began to feel a little weakness in the left thigh and later in the foot and toes. On her ninth hospital day, examination showed further involvement of the right deltoid, which was apparently completely paralyzed. Spasm of the hamstrings had increased and some weakness of nearly the entire left lower extremity was present. By the twenty-sixth hospital day some improvement had taken place in regard to both the amount of spasm present and a slight return of activity in the right deltoid.

On her fifty-sixth hospital day, when the patient had been allowed out of bed, weakness was found in the left gastrocnemius. The patient was found to be unable to stand on the toes of the left foot. During her hospital stay she continued to show improvement, the location and degree of which is readily discerned by looking at the various drawings. Prolonged hospitalization was necessary owing to the fact that the patient's home was in a locality where physical therapy was not available. She was discharged on her one hundred forty-fourth hospital day, showing further improvement in the right hand and forearm and the left thigh.

On follow-up (not represented by drawings) about eight months after admission and three months after discharge from the hospital, the patient showed further improvement, especially in the left lower leg, with improvement in her gait; however, some weakness in the left abductor gluteus medius allowed a slight but hardly perceptible limp. The marked weakness of the right shoulder was still present and was the patient's chief handicap at the time of last examination.

We grant that there are muscles which we have represented according to our scheme but which we could not actually grade. This is true of the palate, intercostals and diaphragm, among others. Clinical evaluation as to the actual degree of functional loss is necessary in such instances.

In 1943, 40 patients with infantile paralysis were admitted to the hospital, and it was with this group that the new method was begun and modified for use in the 1944 series, which consisted of over 350 patients. As this method of analysis is based on fairly easily determined "end points" which can be assessed by any physician, it might be used for many orthopedic and neurologic conditions. It is granted that there is room for further division of any or all of the functional groups, but too many divisions, with the necessary increase of symbols, would lead to confusion rather than to clarity. The grouping of muscles according to the amount of motion whether passive or active is so determined that if a change has occurred on reexamination it is of significance. While incoordination was noted on numerous occasions and was also an important item to deal with in the treat-

ment, no attempt was made to include it on the scheme for recording abnormal findings.

Conclusion

A scheme is presented whereby the degree of resistance to passive motion and the approximate strength of weak muscles on active movement are represented in a graphic manner and in their approximate anatomic relationship. This makes for a quick and accurate appraisal of the status of a patient at any examination and assures ease of comparison of his condition at various periods in the acute and convalescent stages of poliomyelitis.

COMMITTEE REPORTS AMERICAN CONGRESS OF PHYSICAL MEDICINE

Report of the Finance Committee—American Congress of Physical Medicine

It is a pleasure to report that the finances of the American Congress of Physical Medicine are in better condition than has ever been the case previously. The auditor's report for the year ending December 31, 1945 reveals that owing to the able direction of our Executive Director, Dr. Walter J. Zeiter, and our Executive Secretary, Miss Marion G. Smith, the Congress was able for the first time during the year 1945 to purchase United States Savings Bonds in the amount of \$10,000. This development is of real importance because this is the first time that our organization has been able to accumulate enough surplus to set aside a savings fund to serve as a substantial reserve.

Billings for dues to members were made in the current year, 1946, rather than in advance as has been the practice in the past. Despite increased costs, because of careful management, it has been possible to avoid any increase in dues, subscription rates or advertising rates.

In 1945 even though there was a satisfactory net income, it was somewhat less than previously owing to the fact that there was no convention of the Congress last year and the usual convention income was not received.

Income from subscriptions to the ARCHIVES OF PHYSICAL MEDICINE showed an increase of approximately \$1,000 in 1945.

The auditor's report for the period ending December 31, 1944 appeared in published form in the ARCHIVES OF PHYSICAL MEDICINE for February, 1946. The auditor's report for the period ending December 31, 1945 is appended herewith.

Our committee believes that all members of the Congress on Physical Medicine will be gratified to learn of the extremely sound financial status of our organization.

DR. FRANK H. KRUSEN, Chairman.
DR. FRANK H. EWERHARDT.
DR. ROY W. FOUTS.

Report on Examination for Year Ended December 31, 1945

May 23, 1946.

American Congress of Physical Medicine,
30 North Michigan Avenue,
Chicago, Illinois.

Dear Sirs:

We have examined the balance sheet of the American Congress of Physical Medicine as of December 31, 1945, and the summary of net income and surplus for the year ended that date, have reviewed the accounting procedures of the Congress and, without making a detailed audit of the transactions, have examined or tested accounting records of the Congress and other supporting evidence by methods and to the extent we deemed appropriate, except as stated in the following paragraph.

In an organization of this size, it is not practicable to maintain the accounting staff and system which would be required to insure internal control as to sources of income. We tested the correctness of the income recorded on the books by reference to available supporting details, but we did not make the extended verification of the income accounts which would be required in order to certify to the correctness thereof without qualification.

The space, personnel, and facilities of the general office are also used by the American Registry of Physical Therapy Technicians, an affiliated organization. It has been the practice of the Congress to pay the general office expenses and to charge the Registry for a portion thereof, based, in general, on the activities of the two organizations. During the years ended December 31, 1945 and 1944, the Congress billed the Registry for prorated expenses in the amounts of \$6,984.72 and \$4,464.18, respectively.

Subject to the limitation as to verification of income, in our opinion, the accompanying balance

(Continued on page 438)

ARCHIVES of PHYSICAL MEDICINE

OFFICIAL PUBLICATION AMERICAN CONGRESS OF PHYSICAL MEDICINE

.. EDITORIALS ..

DEGENERATIVE JOINT DISEASE

The treatment of patients with degenerative joint disease is a familiar problem to those specializing in Physical Medicine. Although the diagnosis can usually be made with relative ease because of the characteristic physical findings and roentgenographic appearance of the joints, etiology remains obscure to a large extent. Bennett, Waine and Bauer made an interesting study of the changes observed at autopsy in the knee joints of subjects from the age of 10 to 90.¹ They found microscopic variations in all patients beyond the second decade of life, although free of skeletal symptoms, similar to the pathologic changes observed in this disease. They accordingly prefer the term degenerative joint disease to hypertrophic arthritis. Although related to senescence, it cannot simply be considered an ailment of old age. The primary change is degeneration of the mucoid matrix of articular cartilage, a tissue with very limited autogenous reparative powers. Full understanding of the mechanism of degeneration awaits further data on the factors which control maturation and senescence. There is considerable evidence pointing to the importance of repeated mechanical traumata as a causative factor and one which may be prevented to some degree.

The hereditary endowment of the individual is being recognized more and more as a fundamental factor in the incidence of degenerative joint disease. The paper by Stecher elsewhere in this issue on Heberden's nodes illustrates this point. He has shown that their incidence is related to hereditary factors dependent on age, sex, and race, and their presence signalize a subject as one with increased susceptibility to degenerative arthritis elsewhere.

One of the perplexing problems in relation to Heberden's nodes is to explain the appearance of symptoms such as pain, paresthesias and stiffness which occasionally are very troublesome. If the pathologic process is purely one of degeneration the mechanism of symptom production is difficult to understand. It is, of course, important to consider the possibility of early rheumatoid arthritis as a complication. When this disease is ruled out the patient can be reassured and in general spontaneous relief of pain occurs within a few months.

The treatment of degenerative joint disease is rather unsatisfactory, primarily because of the poor reparative power of cartilage and our inability to reverse the degenerative process. Treatment is largely symptomatic, including assurance to the patient that he is not suffering from a disease leading to ankylosis and complete invalidism. By physical means we can do much to relieve pain when present. Rest, local heat and sedative massage are valuable measures. To improve function and decelerate the degenerative process we must rely on improving the joint mechanics, and building up the supporting musculature by graded, active, non-traumatic exercises.

1. Bennett, G. A.; Waine, H., and Bauer: Changes in the Knee Joint at Various Ages. New York, The Commonwealth Fund, Pp. 97.

Committee Reports

(Continued from page 436)

sheet and summary of net income and surplus fairly present, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year, the financial position of the American Congress of Physical Medicine at December 13, 1945, and the results of its operations for the year ended that date.

We submit the following exhibits:

Exhibit —

A — Balance Sheet, December 13, 1945.

B — Summary of Net Income and Surplus for the Year Ended December 31, 1945.

Yours truly,

GEORGE ROSSETTER & Co.

Exhibit A

American Congress of Physical Medicine
(Incorporated in Illinois — Not for Profit)
Balance Sheet, December 31, 1945

Assets

Current Assets:	
Cash in bank and on hand....	\$ 6,978.02
Accounts receivable:	
Advertisers and exhibitor.....	\$ 592.50
Members' dues	154.00
American Registry of Physical Therapy Tech- nicians	1,342.68
Society of Physical Medi- cine	\$ 174.00
Total	\$2,263.18
Less reserve for doubtful accounts	200.00
Investments in United States Saving bonds —	
Series G — at cost.....	10,000.00
Accrued interest	83.32
Sundry	25.99
Total	\$19,150.51

Liabilities

Current Liabilities:	
Accounts payable:	
Trade	\$ 748.38
Refund on subscriptions to "Archives"	72.90
New York Society of Physical Medicine	20.00
Employees' income tax withheld	290.92
Deposit	3.59
Total current liabilities	\$ 1,135.79
Deferred Income:	
Subscriptions to "Archives" — unexpired portion	\$4,464.40
Dues collected in advance — year 1946	247.00
Total deferred income	4,711.40
Surplus, per Exhibit B.....	13,303.32
Total	\$19,150.51

Exhibit B

American Congress of Physical Medicine

Summary of Net Income and Surplus for the Year
Ended December 31, 1945

Income:	
Members' dues	\$ 3,320.90
"Archives":	
Advertising	\$5,143.36
Subscriptions	7,093.57
Sale of cuts, ets.	168.48
Interest on government se- curities	145.82
Miscellaneous	11.60
Total income	\$15,882.83

Expenses:

Office salaries and office expense	\$3,621.61
Printing expense —	
"Archives"	7,363.60
Cuts, half-tones, electros, etc.	589.46
Meeting of Board of Gov- ernors	401.75
Professional fees	437.70
Loss on doubtful accounts....	111.00
Miscellaneous	216.46
Share of office expense billed to Society of Physi- cal Medicine (credit*).....	120.00*
Total expenses	12,621.58

Net income for the year.....	\$ 3,261.25
Surplus at beginning of the year	10,042.07
Surplus at end of the year.....	\$13,303.32

Report on Examination for Year Ended December 31, 1945

May 21, 1946.

American Registry of Physical Therapy
Technicians,
30 North Michigan Avenue,
Chicago, Illinois.

Dear Sirs:

We have examined the balance sheet of The American Registry of Physical Therapy Technicians as of December 31, 1945, and the statement of net income and surplus for the year ended that date, have reviewed the accounting procedures of the Registry and, without making a detailed audit of the transactions, have examined or tested accounting records of the Registry and other supporting evidence by methods and to the extent we deemed appropriate, except as stated in the following paragraph.

In an organization of this size it is not practicable to maintain the accounting staff which would be required to insure internal control as to sources of income. We tested the correctness of the income recorded on the books by reference to

available supporting details, but we did not make the extended verification of the income accounts which would be required in order to certify to the correctness thereof without qualification.

The space, personnel, and facilities of the general office of the American Congress of Physical Medicine, an affiliated organization, are used by the American Registry of Physical Therapy Technicians. It is the practice of the Congress to pay the general office expenses and to charge the Registry for a portion thereof based, in general, on the activities of the two organizations. During the years ended December 31, 1945 and 1944, the Congress billed the Registry for prorated expenses in the amounts of \$6,984.72 and \$4,464.18, respectively.

We did not request the members to confirm the uncollected dues amounting to \$252.00 at December 31, 1945; however, we ascertained that \$120.00 of this amount had been paid at the date of our examination.

Subject to the limitation as to verification of income, in our opinion, the accompanying balance sheet and summary of net income and surplus fairly present, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year, the financial position of the American Registry of Physical Therapy Technicians at December 31, 1945, and the results of its operations for the year ended that date.

We submit the following exhibits:

Exhibit —

A — Balance Sheet, December 31, 1945.

B — Statement of Net Income and Surplus for the Year Ended December 31, 1945.

Yours truly,

GEORGE ROSSETTER & Co.

Exhibit A

American Registry of Physical Therapy Technicians

(Incorporated in Illinois — Not for Profit)

Balance Sheet, December 31, 1945

Assets

Current Assets:

Cash on deposit with the National Boulevard Bank of Chicago	\$ 3,850.35
Accounts receivable — dues	252.00
Investments in United States Savings bonds, Series G — at cost	10,000.00
Accrued interest	60.32

Total	<u>\$14,162.67</u>
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Liabilities

Current Liabilities:

Accounts payable:

American Congress of Physical Medicine

\$1,342.68

Trade

48.63

\$ 1,391.31

Student deposits on Registry pins	122.50
Accrued federal excise tax	14.50
Sundry	5.00

Total current liabilities	\$ 1,533.31
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Deferred Income:

Dues collected in advance — year 1946	\$ 3,298.00
Deposits with applications (subject to refund if applications are rejected)	290.00

Total deferred income	3,588.00
Surplus, per Exhibit B	9,041.36

Total	<u>\$14,162.67</u>
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Exhibit B

American Registry of Physical Therapy Technicians

Statement of Net Income and Surplus for the Year Ended December 31, 1945

Income:

Dues	\$ 3,926.00
Registration fees	7,160.00
Sales:	
Pins	504.00
Emblems	127.65
Directory	42.70
Interest on United States Bonds	165.57
Miscellaneous	6.55

Total income	\$11,932.47
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Expenses:

Office expenses & salaries	\$ 6,984.72
Printing and multigraphing	304.85
Exchange	7.59
Examinations—supervision and grading	314.53
Exhibits	8.43
Professional fees	616.35
Purchase of emblems	236.13
Purchase of pins	339.86
Bond premium	25.00
Directory	485.18
Miscellaneous	9.88

Total expenses	9,332.52
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Net Income for the Year	\$ 2,599.95
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Surplus at Beginning of the year	6,441.41
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Surplus at End of the Year	<u>\$ 9,041.36</u>
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Report of the Meeting Place Committee

An opinion was obtained from the members of the committee on the meeting place for the Congress convention for 1947. Suggestions were received covering all parts of the United States. The feeling of the committee is that the cities of Cleveland, Ohio, and Chicago should be excluded because two conventions were held in each of these cities just prior to and during the war period. It was recommended that consideration

be given to a meeting to be held in the West; if not the far West at least West of the Mississippi river. Because of the growing interest in Physical Medicine in the Southwest, this section, too, was recommended. The committee will give further consideration to this problem so that a final recommendation can be made at the annual business meeting. In the meantime members are asked to give some thought to this matter and discuss it with the members of the committee so that the opinions of everyone might be weighed before the question is put to vote.

WALTER J. ZEITER, M.D., Chairman.

EARL C. ELKINS, M.D.

RICHARD KOVACS, M.D.

FRED B. MOOR, M.D.

EMIL J. C. HILDENBRAND, M.D.

Report of Committee on Military Problems

No meeting of the Committee on Military Problems was held during the year. However, letters were written to members of the committee and various officers of the Armed Service and Veterans Administration. Requests were made for submission of problems, comments and suggestions for consideration of the committee. It was considered desirable to prepare a list of the names together with the places of assignment of Medical Officers assigned to Physical Medicine Departments in the Army, Navy and Veterans Administration. This has been accomplished and is presented in this report.

According to one authority of the division of Physical Medicine of the United States Army who has discussed various problems pertaining to physical medicine with representatives of the Navy, "it is felt that the needs of both the Army and Navy are identical, and if it were possible to suggest a sound program to be carried out in the peacetime years, the field of physical medicine both for the civilian and military portions of the country will be vastly improved." A similar report from the Veterans Administration is as follows, "it would be most desirable and advantageous to continue the grouping of the members of the American Congress of Physical Medicine who were in active military service so that a group meeting could be held as a unit each year during the time of the Annual Session for the purpose of clarifying difficult problems, discussion of impending difficulties as well as to mutually enjoy certain social relationships such as a luncheon, stag party or a smoker. It is thought that such plans might serve to stimulate a closer relationship between all physicians specializing in the field of Physical Medicine which will lead ultimately to definite benefit, not only to the individual members but to the specialty as a whole."

Objectives

It has been suggested both by the Army and the Navy that the objectives of both services regarding present and future needs in Physical Medicine may be classified as follows:

(1). — *Educational Needs.* — (a) Formulation of a suggested course content for in-service training for the Army and Navy medical officers in Physical Medicine. (b) Establishment of a good graduate course in Physical Therapy for physical therapy aides being separated from the Services, in which they will be assured excellent refresher instruction in applied anatomy, physiology of exercise, etc.

(2). — *Scientific Investigation.* — Many special fields in Physical Medicine have received tremendous impetuses by the mass of war casualties and the lessons learned should be evaluated and research continued in civilian fields, in order to crystallize the knowledge gained during the war. Examples of the special programs which should be evaluated are:

1. The extent to which so-called general conditioning exercises are of value in the average hospital routine, and an expression of opinion concerning who should supervise such an exercise program.
2. Physical Medicine in Cerebral Palsy, Adult Cerebral Injury Program.
3. Electrodiagnostic procedures and the standardization of equipment in this field

Recommendations

It is recommended that more educational training facilities be established for the training of physicians in Physical Medicine or medical officers of the Veterans Administration. It is recommended that the Education Committee of the American Congress of Physical Medicine as well as other educational committees communicate with representatives of the Veterans Administration and members of the Dean's Committee of Medical Schools urging them to expand the educational facilities for fellowship and residency training in Physical Medicine for Medical Officers of the Veterans Administration who may be interested in securing such training. It is recommended also that a program for the further development of training films and training aids of various types be included as an activity of the educational program which may be used by members of the Veterans Administration, Armed Forces and Civilian Hospitals and civilian positions alike.

The following is a partial list of the names, positions and locations of Medical Officers of the military service and Veterans Administration.

Army Medical Officers in Physical Medicine

Capt. Friedland, Cushing Gen. Hosp., Framingham, Mass.

Lt. W. H. Smith, Halloran Gen. Hosp., Willowbrook, SI, N. Y.

Lt. W. F. Hanisek, Valley Forge Gen. Hosp., Phoenixville, Pa.

Lt. J. E. Powell, Oliver Gen. Hosp., Augusta, Ga.

Lt. J. N. Cabanzo, Wakeman Gen. Hosp., Camp Atterbury, Ind.

Major J. K. Kuitert, Fitzsimons Gen. Hosp., Denver.

Capt. J. S. Blaisdell, Fitzsimons Gen. Hosp., Denver.

Lt. E. M. Krusen, Jr., Army and Navy Gen. Hosp., Hot Springs, Ark.

Lt. J. C. Jones, Beaumont Gen. Hosp., El Paso, Texas.

Capt. H. L. Rudolph, Letterman Gen. Hosp., San Francisco.

Lt. B. A. Rutledge, Letterman Gen. Hosp., San Francisco.

Capt. J. Ehrlich, Brooke Gen. Hosp., Ft. Sam Houston, Tex.

Capt. G. W. Soffe, Walter Reed Gen. Hosp., Washington, D. C.

Lt. E. J. Cummins, Walter Reed Gen. Hosp., Washington, D. C.

Lt. D. C. Brown, McCornack Gen. Hosp., Pasadena, Calif.

Lt. W. L. Dawson, Pratt Gen. Hosp., Coral Gables, Fla.

Capt. C. A. Furey, Tilton Gen. Hosp., Ft. Dix, N. J.

Lt. Col. B. A. Strickland, Off. The Surgeon General, Washington, D. C.

Army Medical Officers in Reconditioning

Lt. W. F. Maher, Halloran Gen. Hosp., Wilkes-Barre, Pa., N. Y.

Capt. G. C. Erickson, Fitzsimons Gen. Hosp., Denver, Colo.

Col. E. M. Smith, Brooke Gen. Hosp., Ft. Sam Houston, Tex.

Major O. D. Sprecher, Percy Jones Gen. Hosp., Battle Creek, Mich.

Lt. N. F. Conte, Army and Navy Gen. Hosp., Hot Springs, Ark.

Major A. S. Anderson, Madigan Gen. Hosp., Tacoma, Wash.

Lt. T. Kerr, Jr., Tilton Gen. Hosp., Ft. Dix, N. J.

Lt. J. D. Berry, Headquarters, First Army, New York, N. Y.

Medical Officers in Physical Medicine of the Veterans Administration

Major C. C. Adams, Chief, Phys. Med., Murfreesboro, Tenn.

Capt. I. Blum, Chief, Phys. Med., Newark Regional Office.

Lt. Col. B. Boynton, Sr. Consultant, Phys. Med., Dallas, Texas.

Major R. Brightwell, Chief, Phys. Med., St. Louis, Mo.

Lt. Col. C. R. Brooke, Chief, Phys. Med., C. O., Washington, D. C.

Capt. A. M. Center, Chief, Phys. Med., Tuscaloosa, Ala.

Lt. Col. D. Covalt, Asst. Med. Dir., C. O., Med. Rehab., Washington, D. C.

Capt. D. Dancik, Chief, Phys. Med., Northport, L. I., N. Y.

Major H. M. Davis, Chief, Phys. Med., Tuskegee, Ala.

Lt. Col. Dawson, Chief, Phys. Med., Richmond, Va.

Major J. R. Deegan, Chief, Phys. Med., Walla Walla, Wash.

Capt. L. S. Diamond, Chief, Phys. Med., American Lake, Wash.

Capt. E. Doane, Chief, Phys. Med., Sunmount, N. Y.

Capt. R. Dow, Chief, Phys. Med., Washington, D. C.

Capt. F. E. Dugdale, Chief, Phys. Med., Dayton, Ohio.

Capt. O. Eisert, Chief, Phys. Med., Batavia, N. Y.

Capt. E. Emma, Chief, Phys. Med., Castle Point, N. Y.

Capt. J. Erlich, Chief, Phys. Med., Louisville, Ky.

Capt. J. E. Feingold, Chief, Phys. Med., Roanoke, Va.

Major E. W. Fowlks, Chief, Phys. Med., Portland, Ore.

Capt. F. Friedland, Chief, Phys. Med., Los Angeles.

Capt. J. C. Fulmer, Chief, Phys. Med., Coatesville, Pa.

Capt. H. Y. Glickman, Chief, Phys. Med., Cheyenne, Wyoming.

Major Glotfelty, Chief, Phys. Med., Sheridan, Wyoming.

Lt. Comm. Goldstein, Chief, Phys. Med., Lyons, N. J.

Major M. Grossman, Chief, Phys. Med., Waco, Texas.

Major, H. J. Haymes, Chief, Acute Ser., Topeka, Kans.

Capt. M. Hoberman, Chief, Phys. Med., West Roxbury, Mass.

Lt. Col. Ora L. Huddleston, Sr. Consultant, P. M., San Francisco.

Lt. L. C. Jensen, Chief, Phys. Med., Minneapolis.

Major E. F. Jones, Chief, Phys. Med., Marion, Ind.

Major H. Kessler, Chief, Phys. Med., Bronx, N. Y.

Major A. B. C. Knudsen, Asst. Chief, Phys. Med., C. O., Washington, D. C.

Major J. H. Kuitert, Chief, Phys. Med., St. Cloud, Minn.

Capt. J. Lee, Chief, Phys. Med., Albany, N. Y., Regional O.

Major W. Lee, Chief, Phys. Med., Richmond, Va.

Major C. Levenson, Assoc. Cons., Phys. Med., Philadelphia.

Capt. S. Licht, Chief, Phys. Med., Boston.

Capt. S. Machover, Chief, Phys. Med., Aspinwall, Pa.

Capt. J. Martella, Chief, Phys. Med., Rutland Heights, Mass.

Capt. H. Mathiasen, Chief, Phys. Med., Alexandria, La.

Major C. H. Mitchell, Chief, Phys. Med., Hines, Ill.—Vaughan Gen.

Major B. G. Morrison, Chief, Phys. Med., Perry Point, Md.

Major M. Neeches, Chief, Phys. Med., Dearborn, Mich.

Commander L. B. Newman, Chief, Phys. Med., Hines, Ill.—Vaughan Gen.

Capt. H. O'Donnell, Chief, Phys. Med., Keshoughtan, Va.

Capt. O. J. Perrillo, Chief, Phys. Med., Lincoln, Nebr.

Major C. Psaki, Chief, Phys. Med., Philadelphia.
Capt. D. A. Roberts, Chief, Phys. Med., Ft. Howard, Md.

Capt. S. Rosenbliett, Chief, Phys. Med., Roseburg, Ore.

Capt. M. Rubinstein, Chief, Phys. Med., Livermore, Calif.

Lt. Comm. J. I. Rudd, Chief, Phys. Med., West Rorbury, Mass.

Capt. A. S. Russek, Chief, Phys. Med., Mountain Home, Tenn.

Capt. H. E. Samburg, Chief, Phys. Med., Des Moines, Iowa.

Capt. M. T. Sax, Chief, Phys. Med., Albuquerque, N. Mex.

Capt. J. J. Sazama, Chief, Phys. Med., Dallas, Texas.

Capt. R. W. Schmitt, Chief, Phys. Med., Montgomery, Ala.

Capt. J. L. Sitterley, Chief, Phys. Med., San Fernando, Calif.

Major J. Smith, Chief, Phys. Med., New York, N. Y.

Major S. Spencer, Chief, Phys. Med., Oteen, N. C.

Capt. W. E. Steiner, Chief, Phys. Med., Atlanta, Ga.

Major J. C. Tatum, Chief, Phys. Med., Downey, Ill.

Capt. I. Tepperberg, Chief, Phys. Med., New York Reg. Off.

Lt. Col. N. E. Titus, Chief, Phys. Med., Jefferson Barracks, Mo.

Capt. B. A. Treister, Chief, Phys. Med., Brecksville, Ohio.

Major W. V. Walsh, Chief, Phys. Med., Mendota, Wis.

Capt. H. S. Whiting, Chief, Phys. Med., Newington, Conn.

Lt. G. S. Wickler, Chief, Phys. Med., Ft. Bayard, N. Mex.

Lt. Col. G. Wilson, Chief, Phys. Med., Chicago.

Capt. S. Winokur, Chief, Phys. Med., New Orleans.

Major H. L. Zankel, Chief, Phys. Med., Bay Pines, Fla.

O. LEONARD HUDDLESTON, M.D., Chairman.

EDWARD LEE ALEXANDER, M.D.

BEN BOYNTON, M.D.

RODNEY CHAMBERLAIN, M.D.

R. E. KINNEMAN, M.D.

DONALD ROSE, M.D.

NORMAN E. TITUS, M.D.

JOHN F. WAYMAN, M.D.

Administration or have received training in physical medicine under the G. I. Bill of Rights.

At the special meeting of the Board of Governors, held at Chicago on December 8th, 1945, forty-six applicants were elected to membership, with the following geographical distribution: New York, 15; Illinois, Ohio, 3 each; Pennsylvania, 3; Minnesota, W. Virginia, 2 each; California, Colorado, Connecticut, Iowa, Missouri, Nebraska, Nevada, N. Carolina, Texas, Washington, D. C., 1 each; abroad: Canada, 4; Mexico and Denmark, 1 each.

Members endorsing new applications are requested to make sure that the application contains the name of the Secretary of the County Medical Society to which the applicant belongs, in order to enable verification without delay by the Executive Office. Physicians on active duty in the Army, Navy or Veterans Administration do not have to belong to a local county medical society.

The membership census on May 1st, 1946 showed a total membership of 525, distributed according to states as follows:

State	Number of Members	State	Number of Members
Alabama	1	Montana	1
Arkansas	3	Nebraska	4
California	26	New Jersey	19
Colorado	3	New York	110
Connecticut	9	Nevada	1
District of Columbia	16	North Carolina	4
Florida	10	Ohio	33
Georgia	5	Oklahoma	4
Illinois	27	Oregon	1
Indiana	17	Pennsylvania	57
Iowa	8	Rhode Island	2
Kansas	3	Tennessee	4
Kentucky	3	Texas	13
Louisiana	3	Utah	2
Maine	1	Vermont	1
Maryland	7	Virginia	8
Massachusetts	16	Washington	4
Michigan	7	West Virginia	5
Minnesota	8	Wisconsin	11
Missouri	7	Foreign	28
Mississippi	1	Address Unknown	5

Membership outside of the United States, totaling 28, was distributed as follows: Canada, 16; England, Mexico, Portugal, 2 each; Belgium, Denmark, Brazil, Uruguay, Venezuela, 1 each.

At the time of rendering this report, the number of new applications pending was 40.

RICHARD KOVÁCS, M.D., Chairman.

WAYNE MCFARLAND, M.D.

ISADORE LEVIN, M.D.

B. S. TROEDSSON, M.D.

Report of the Committee on Membership

The Committee on Membership reports with great satisfaction that the number of new applications for membership during the past two years has shown a steady increase. Most of the new applicants were young men who received training in physical medicine during the war period; quite a few of the very recent applicants are on active duty in physical medicine in the Veterans

Report of the Committee on Cooperation with Army, Navy, Public Health and Veterans Administration

Relationships with various governmental services have been maintained on a very cordial level throughout the past year. The Chairman has served as Chairman of a Committee on War and Postwar Physical Rehabilitation and Reconditioning which met every sixty days in Washington throughout the war and which served to coordinate activities in rehabilitation of disabled soldiers and sailors.

The Army has finally established a Physical Medicine Consultants Division in the Office of the Surgeon General and a Division of Physical Medicine has been established in the Veterans Administration under the direction of Lt. Col. Charles Brooke and Dr. A. B. C. Knudson, working in close contact with Dr. Donald Covalt, Assistant Medical Director in Charge of Rehabilitation. The Navy's program for physical medicine and rehabilitation under Capt. Gordon Tayloe and Comdr. Harry Etter has progressed rapidly and fine in-service programs for training of medical officers and technical personnel have been established in both the Army and the Navy.

The Army, Navy and Veterans Administration have cooperated with the Chairman of our committee in the preparation of a Feature Exhibit on Physical Medicine to be presented at the annual meeting of the American Medical Association in San Francisco, July 1 to July 5.

In summary, it is evident that tremendous progress in the advancement of physical medicine in various governmental services has been made during the past year.

FRANK H. KRUSEN, M.D., Chairman.
EVERILL W. FOWLKS, M.D.
O. LEONARD HUDDLESTON, M.D.
H. WORLEY KENDALL, M.D.
LOUIS B. NEWMAN, M.D.

Report of Committee on Advances in Education

The Committee on Advances in Education of the Congress of Physical Medicine for 1945 and 1946, was asked to function relative to several problems.

During the fall of 1945, the president of the Congress requested the committee to make recommendations regarding those people who had had partial training in the armed services and experience in reconditioning but no formal training as physical therapy technicians. The consensus of the committee was that no credit should be given to any individual who had not had proper prerequisite training and minimal formal training. There was some discussion of the possibility of giving partial credit on the practice portion of the courses in physical therapy to those individuals from the armed service who had considerable experience in physical therapy technic.

However, the majority opinion was that this should not and could not be recommended because the school authorities would have no way of evaluating the practical experience of individuals coming from the armed services. It was recommended by the committee to the Board of Governors that there be no change in the standards of the technical training regardless of experience of the applicant and that every effort should be made to make it known that these partially trained people can not be considered qualified technicians and should not be employed as such.

There was a discussion by the committee relative to the prerequisite courses for approved schools of physical therapy. The general consensus was that prerequisites should remain as they are or be increased to a minimum of three years of college with proper credit in biologic sciences, registered nurses or graduates in physical education. Some members of the committee recommended courses requiring four years giving a bachelor's degree and a certificate in physical therapy.

There were communications sent to the committee relative to standards of training of the personnel in physical therapy in the Navy. It was pointed out that courses in the Navy were not assumed to be approved courses.

The committee, by means of communications by mail, discussed the instruction course to be given at the meeting of the Congress, September 4 to 7, inclusive. It was decided to try to have presented subjects which are largely basic in nature, along with discussion of some of the phases of rehabilitation. The speakers for the course have all been selected and nearly all of them have accepted the invitation to speak.

The committee has been asked to assist in conducting the educational conference to be held during the meeting of the Congress. The medical and technical directors and certain other people interested in education and the schools of physical therapy have been asked to participate. At this meeting there will be a discussion of an agenda covering various problems relative to schools of physical therapy; e. g. prerequisites, standards, etc.; and other problems relative to education in physical medicine.

EARL C. ELKINS, M.D., Chairman.
FRANCES BAKER, M.D.
ROBERT L. BENNETT, M.D.
ARTHUR L. WATKINS, M.D.
GUY HERBERT FISK, M.D.

Report of the Committee on Public Relations

The most important matter to come before the Committee has been the hearings of the Federal Communications Commission on the Allocation of frequencies in the Radio Spectrum. This subject is of vital importance to physicians using radio frequency apparatus in the practice of medicine and the Congress representing those physicians particularly interested in this subject was in duty bound to protect their interest at these hearings. Consequently, the committee was represented in

Washington by the chairman as well as by suitable briefs submitted for the study of the Commission.

In addition, Dr. Emil J. Hildenbrand, one of our members, testified. The American Hospital Association was represented by Dr. Warren P. Morrill. Dr. Horatio B. Williams testified in behalf of Columbia University and the Council on Physical Medicine of the American Medical Association. Representatives of all manufacturers of medical apparatus also appeared.

Mr. Howard A. Carter, Secretary of the Council on Physical Medicine, although present was prevented from testifying due to a resolution by the Council not to oppose the ruling of the Commission. Mr. Carter, however, did testify at the oral argument at a later date, but his testimony did nothing to help the medical profession obtain a reasonable allocation. This action by the Council is certainly open to criticism, as we naturally would look to the A. M. A. to protect the physicians' interest especially when they have seen fit to establish a Council on Physical Medicine. If it is not the Council's duty to protect the physician doing physical medicine, whose interest are they protecting? There may be a good reason for this attitude, but your chairman does not know what it is. At the original hearing, October 25, 1944, the Radio Technical Planning Board, Panel 12 proposed for both medical and industrial use the following allocation:

13.66 Megacycles	+ or — 1%	274 Kilocycles
27.32 Megacycles	+ or — 7.3%	4008 Kilocycles
40.98 Megacycles	+ or — 0.5%	430 Kilocycles

All in all, a total spectrum space of 11,805 Kilocycles for present use was requested.

Anyone not familiar with the task facing the Commission cannot realize the magnitude of the problem and in justice to all the other claimants for space in the spectrum, such a large allocation was simply not possible. The problem facing the medical profession was to obtain sufficient space so the use of crystal controlled machinery would not be necessary. Crystal control means a large increase in the original cost of equipment, increased cost of service, and inability to get service in small towns, or the complete screening of rooms at a very substantial cost.

This situation would result in increased cost to the physician, the patient, and in many instances, the inability of the physician and hospital to utilize this valuable aid in the practice of medicine.

The testimony before the Commission brought out the following facts (quoted from the transactions of the Commission):

With respect to medical apparatus testimony at the hearings indicated that although the exact frequency on which diathermy equipment operates is not of therapeutic importance the three frequencies, 13.66 megacycles, 27.32 megacycles, and 40.98 megacycles have been most generally used and have proved satisfactory in practice. The lowest of these three frequencies appears to be most efficient for the coil type of applicator and the highest for the condenser type. More-

over, although there appears to be some disagreement on this point, it appears the middle band of 27.32 megacycles can be used for either type of application with satisfactory therapeutic results and with an engineering efficiency which, though less than that obtainable by operation on the other frequencies, is nevertheless satisfactory.

The Commission's Proposal of January 15, 1945

In its Report of January 15, 1945, the Commission proposed for the Industrial and Medical Services the allocation of three frequency bands centered on 13.66 megacycles, 27.32 megacycles, and 40.98 megacycles. This was in harmony with the recommendations of representatives of the medical service on Panel 12 of the Radio Technical Planning Board insofar as the center frequencies of 13.66 megacycles, 27.32 megacycles and 40.98 megacycles were concerned. However, upon a careful review of the record the Commission proposed that these bands have a channel width in each case of plus or minus 0.05 per cent of the center frequency instead of the wide channel widths proposed by Panel 12 of the Radio Technical Planning Board.

In the light of these basic considerations, and the many competing communication needs for the limited frequency space available, assignment of the numerous wide frequency bands recommended by the Radio Technical Planning Board for the industrial and medical services did not appear to be justified. It was, therefore, proposed that the relatively narrow channels described above be allocated for the industrial and medical services, even though the cost of equipment capable of operating within those channels might be somewhat higher because of the necessity of utilizing crystal control. It was pointed out in the report that as an alternative to the use of such apparatus there was, in general, shielding and filtering for guarding against interference to radio communication.

This ruling meant that all high frequency machines would have to be crystal controlled or the room where it was used shielded and screened.

The Commission then set the date of March 3, 1945, for oral argument and your chairman again appeared to protest aided by representatives of the manufacturers of medical apparatus and industry.

Brief Submitted

The following brief was submitted in addition to the oral argument:

February 23, 1945.

Federal Communications Commission,

Gentlemen:

Re: In the matter of Allocation of Frequencies to the Various Classes of Non-Governmental Services in the Radio Spectrum from 10 Kc. to 30,000,000 Kc.

Docket No. 6651.

We desire to appeal from the Commission's announced intention to allocate, for the use of medical services, three bands having a center frequency of 13.66 mc, 27.32 mc and 40.98 mc with a proposed band width of 0.05 per cent in each

case. This allocation would work great hardship on the more than 50,000 physicians and 2,200 hospitals in the United States using short wave diathermy equipment in the relief of pain and suffering and the saving of life. It is conservatively estimated that in the United States 300,000 patients daily receive short wave diathermy treatments and that an average of over 90,000,000 treatments per year are given.

As official representative of the American Congress of Physical Medicine and Society of Physical Medicine, organizations which represent those interested in this field of medicine and for all physicians using short wave diathermy in the treatment of patients, I wish to present the following facts: If the ruling of the Commission is put into effect and physicians are limited to apparatus with a wavelength of plus or minus five one-hundredths of one per cent, it will mean an increase in the cost of apparatus estimated by various men from one to five times the present cost. This increase in cost will limit very materially the number of physicians financially able to purchase this apparatus. This is particularly true of physicians in the armed services who will be financially unable to resume practice with this equipment at such excessive costs. In fairness to our colleagues in the service we protest this ruling made during their absence and when they could not make their influence felt. The hospitals today find difficulty in financing present day prices for equipment. Purchase of the equipment at high prices will mean a marked limitation of the use of short wave diathermy and consequently many patients will not receive this much needed treatment.

Hospitals presently equipped with apparatus not conforming to the narrow band will find the cost of converting to the new type of apparatus impossible to bear. In an institution such as Jefferson Hospital where we employ a number of machines, it would cost several thousand dollars to make the change. The suggestion has been made that present apparatus could be used if the rooms were screened but this is impractical because of the expense involved in screening a large department, and also due to the fact that the apparatus must be moved from one room to another and frequently patients must be treated in their private rooms.

The narrow limitation of wavelengths also brings to the foreground the question of the complicated crystal controlled apparatus. It would require a skilled radio engineer to service the machines and keep them in working condition and on the proper wavelengths. Even in large cities at the present moment such service is not available, and how can we possibly expect physicians in small towns distant from large centers to secure service for their machines. This factor alone is going to result in machines being idle for varying periods of time or in the absolute inability for the average small town physician to employ diathermy.

Some definite statement should be made in reference to the present apparatus. How long

will we be able to use it before we will have to convert to the new wavelength? Any conversion within a short period of time will be impossible because of the lack of equipment, and an immediate screening of rooms would place an unwarranted financial burden on physicians and hospitals.

Physicians were the first to use high frequency in the treatment of disease, long before any commercial use was found for it. This alone should establish a priority for the medical profession in the consideration of wavelengths. The Commission has seen fit to allocate ten times as much space in the spectrum to amateur communications than to the medical profession. While the importance of amateur communications is not depreciated, the importance of diathermy treatment of thousands of patients by physicians and hospitals demands certainly as much or greater consideration. The possibility of combining the three wavelengths allocating one with a sufficiently wide variation should receive consideration, for as far as we know the same heating effects can be obtained from any wavelengths. The allocating of wavelengths to the medical profession in the same band with those used for industrial purposes might solve the problem. A wide range might be used here without danger of interference with communication.

High frequency currents now occupy an important place in the practice of medicine. Increasing thousands are being treated every day, especially with the new uses in the government hospitals. Anything that will deny to the patient the valuable benefits of the high frequency current or that will make the cost of treatment greater demands serious consideration. Unfortunately, certain concerns who control patents that are used in crystal controlled machines are all too willing to see this burden placed upon hospitals, physicians, and patients, in order that they can collect their royalties. Insidious influences are also evident in our own medical organizations which have not seen fit to stand behind the medical profession at home or in the army.

The importance of the high frequency currents to the medical profession is evident in the results obtained in the treatment of our disabled veterans and in the treatment of the thousands who have suffered from industrial accidents. Such recognition is only established by the good results following the use of diathermy in the treatment of diseases and injuries. It means a shortening of the period of disability and the return of patients to their former economic status with lessened disability. The increase of cost in apparatus, difficulties of servicing will work irreparable harm to the medical uses of the high frequency current. We physicians feel that the Commission must find a way to allocate wavelengths with a sufficient variation that apparatus will be available at a reasonable price, that service will be simplified, and this valuable curative agent not be denied to the thousands who can be benefited by it. We do not ask the impossible but we feel that the health and welfare of this country is of sufficient im-

portance to warrant every effort being made by the Commission to secure the legitimate demands which we are asking.

WILLIAM H. SCHMIDT, M.D., Chairman
of the Public Relations Committee,
American Congress of Physical Medi-
cine and Society of Physical Medicine.

As a result of this meeting, a satisfactory compromise was obtained that assured a reasonable allocation to the medical profession and avoided the added expense and difficulties of crystal control. The following is again quoted from the transactions of the Commission:

Final Allocation for Industrial and Medical Use

In oral argument upon the proposed allocation for medical and industrial use held before the Commission on March 2 and 3, 1945, the representative of the Council on Physical Medicine of the American Medical Association expressed the view of that body that the Commission had given careful consideration to the factors involved in the allocation of frequencies for medical use and stated that the Council had decided to raise no objection to the allocations proposed by the Commission. However, representatives of Panel 12 of the Radio Technical Planning Board and other witnesses who appeared, objected to the proposed allocation. The objection of those representing the medical service, including certain manufacturers of high frequency medical equipment, was based primarily on a repetition of the argument that crystal-controlled apparatus would be required for operation, within the proposed bands and that the increased cost and upkeep expense of such apparatus over the cost and upkeep expense of equipment now in general use would place a heavy additional economic burden on the medical profession. It was argued that this in turn would mean substantially increased costs to the public for medical service. However, instead of insisting upon the exceptionally wide bands previously requested, these witnesses appearing on behalf of the medical service modified their former position considerably to the extent of assuring the commission that it would be practical to manufacture non-crystal-controlled high-frequency medical apparatus capable of satisfactorily operating within a frequency band having a width of plus or minus 0.5 per cent. Moreover, they stated that the initial cost of such equipment would involve only a moderate increase over the cost of equipment presently in general use and that there would be no increased cost of upkeep. They, therefore, urged that the proposed frequency band centered upon 27.32 megacycles, for which they had originally requested a band width of plus or minus 7.3 per cent of the center frequency, be enlarged from a width of plus or minus .05 per cent of the center frequency, proposed by the Commission, to a width of plus or minus .5 per cent of that frequency.

In the light of these considerably more modest

and reasonable recommendations, and in reliance upon the above assurance by manufacturers regarding the manufacture of medical diathermy equipment capable of operating within a band having a width of plus or minus .5 per cent of the center frequency, the Commission has found it possible by reducing the space allocated to amateurs in this region of the spectrum to enlarge the 27 megacycle band to a width of plus or minus .5 per cent of the center frequency of 27.32 megacycles. In terms of kilocycles this would be a band of 270 kilocycles. On this point, and in order to avoid any possible confusion in the future, it should be emphasized that the Commission's decision to allocate the wider band referred to above is based upon the express assurance by manufacturers that non-crystal medical diathermy equipment can be built which will possess the stability necessary to assure operation within the assigned channel not only at the outset but also during its useful life and despite reasonable wear and tear resulting from use. In addition, the apparatus must have provision for the suppression of harmonic radiation adequate to prevent such radiation from escaping into frequency channels allocated for communication purposes. If, in practice, the equipment does not measure up to these assurances, crystal control will have to be required.

In summary form, then, the final frequency allocation for medical and industrial use is as follows:

CENTER FREQUENCY (Megacycles)	BAND WIDTH (% of center frequency)	BAND WIDTH (Kilocycles)
13.66	± .05%	15
27.32	± .5%	270
40.98	± .05%	40

It is contemplated that equipment manufactured subsequent to the date of this report will be required to be operated within the frequency channels set forth in this report or, through use of shielding and filtering or such other means as may be available, be operated in a manner which will not cause interference with communications. So far as existing equipment is concerned, it is contemplated that a reasonable length of time (to be later specified) will be allowed during which such equipment may continue to be used as before. However, even as to existing equipment where it is found that such equipment is causing interference to communications, immediate steps will be required to eliminate the interference.

Your committee feels that our efforts have been amply rewarded and the allocation is a very satisfactory one which protects the physician, the patient, and the hospital. Surely if we had allowed this matter to go by default, the Congress could be justifiably criticized for a lack of interest in the welfare of physicians practicing physical medicine.

WM H. SCHMIDT, M.D., Chairman.
H. WORLEY KENDELL, M.D.
ROBERT L. STECHER, M.D.
WILLIAM NORTHWAY, M.D.

Report of Committee on Medical Economics

Economics is the science that treats of the production, preservation and distribution of wealth and of the means and methods of living well, for the state, the family and the individual.

Medical economics is the science that embodies the production, preservation and distribution of medical services. In the specialty of Physical Medicine, service is rendered in every medical field because Physical Medicine is the basis of all Medicine. It was widely known and used from the earliest days until the recent past. It is again coming into its own as we return to first principles—Health, Physical Fitness and Preventive Medicine, as the groundwork for a healthy nation.

As the guardian of the health of the people in primitive society it was the duty of the physicians to see that their people were in good physical condition. They therefore looked first to proper nutrition without which there can be no health. Food, and all that that implies, has been and is the concern of all good physicians. We are what we eat as has been shown down through the ages. Those nations still survive who early learned the proper foods to eat and the proper preparation and preservation of them.

Housing with proper sanitation, was and is the next concern of the real physician. Climate can make or break the growing organism, the adolescent, and the adult. The ability to create a proper environment means the retention of health at the proper biologic level, well beyond the three score and ten that is the result of the unending struggle against wind, weather, storm and too great tempo to begin with and all that is added thereto in the struggle for existence.

Proper clothing is part of a suitable environment, dependent upon climatic conditions and, essential to comfort and the ability to work.

"Man cannot live by bread alone" so Recreation is a most essential part of any Health Program and a most important part of Physical Medicine. Rest, Relaxation and Recreation are the very foundation stones of Physical Medicine and therefore important in any system for better health.

Sun, Air, Light, Heat, Water, Exercise, Electricity, the physical forces by which man lives are the basis of Health and Physical Fitness and make for Preventive Medicine. The specialist in the field of Physical Medicine should be as well versed in Spa Therapy and Climatotherapy for prevention, as he is in their use in rehabilitation.

The American Medical Association, in its ten points in the National Health Program adopted by the Board of Trustees and the Council on Medical Service, February 14, 1946, stresses "widespread education in the field of Health and the widest dissemination of information regarding the prevention of disease and its treatment by authoritative agencies. Health education should be considered a necessary function of all departments of public health, medical associations and school authorities."

This education should begin within the profession itself, in the classroom of the medical school. It is trite to say we are taught about hygiene and instructing the patient on how to conduct himself apart from taking medicines. The great need is for detailed instructions on daily living, as to his diet, sleep, exercise, posture, bathing, resting, walking, and the other fundamentals of Physical Medicine that he looks to the physician to explain to him. The young physician does not recognize these matters as Physical Medicine, which he looks on as a clutter of machines, switches, electric currents, colored lights, baking and massage, for which he has a profound contempt as psychiatric in effect only. He is still in the pathologic stage where only surgery, chemotherapy and radiology register. There is a shock ahead of him when he must learn there are other modes of treatment where the above have been used and there still is left much to be desired.

Rehabilitation and reconditioning are discussed as if they have but just been discovered and are the private property of certain persons who have rushed into print to spread the gospel to an ignorant world. The pioneers in World War I had their troubles getting an audience for their painstaking work and their recommendations. Strange as it may seem, in World War II, some men have gone through the entire conflict and have failed to learn that there are measures that have been found most useful in shortening convalescence, relieving pain, training for a job, building up morale, saving one's reason. They may have heard vaguely of these measures as applied to industrial accidents. Some do not know what goes on in their own hospitals in the way of research, rebuilding, restoring human beings to health, happiness and honor in the community.

There has been tremendous newspaper, radio and magazine publicity, attendant upon the bestowal of \$1,100,000 by Mr. Bernard Baruch for the study of the possibilities and probabilities of physical medicine. There has been previously unheard of commendations by the Army, Navy and Air Forces of the beneficent effects of physical medicine as an adjunct to surgical and medical care. The public is awakened to the help that may be derived from the judicious use of physical measures through the latest medical magazines, the *Readers Digest*, *Life*, *Look*, etc. Despite all this, various Rip Van Winkles would thrust back into a subordinate place, as of little consequence, all that has been brought into the open concerning these most necessary adjuvant measures to any procedures. They do not recognize they are using physical measures in every case treated.

The surgeon, obstetrician or internist who does not see that his patient gets exercise early may find himself promoting embolism, thrombophlebitis or phlebothrombosis. Late, intensive physical therapy instead of early gentle complementary measures may leave fractures, dislocations, arthritic joints, unhealed wounds, bedsores, etc., a source of annoyance and discomfort and may

delay the return to work with all the psychic disturbance this involves. Besides being helped by physical measures, the patient relieves his feelings by pouring out his troubles, occupational, domestic, medical, to the psychiatrist and the technicians and gets an imponderable burden off his mind and heart to his general better feeling. He knows something is being done for him and reacts accordingly, so do his family and friends.

Where early physical medicine, which includes occupational therapy, is started, step by step, if possible, with the main measures of treatment, the patient is made comfortable and his convalescence is shortened considerably. This has been borne out over the years in the experience of specialists in this field but it has to be iterated and reiterated time and again for the benefit of those who have given it no thought, especially if these occupy a prominent place in the councils and counsels of medical schools, hospitals, institutions, industry.

Those institutions recognizing the importance of physical medicine, which includes physical therapy, occupational therapy and work therapy and is the main means of rehabilitation and reconditioning, proclaim themselves in the vanguard in medical education and will become centers for progress. They realize the importance of having in charge adequately trained specialists of large clinical experience in all fields, as recommended by the American Medical Association in 1941, at the Cleveland Session. This was a great step forward but it was hardly perceived by many institutions and physicians.

Physical Medicine requires a thorough knowledge of biology, biophysics, biochemistry, physiology, pathology, general medicine, surgical principles and those of all the other specialties. Physical measures are just as potent for evil as for good. Undue haste, poor judgment, ignorance of the underlying pathology in any case can cause irreparable damage. Contraindications are more important than indications if one wishes to save trouble and suits. There is the constant fear of dangers to give the Director of the Department pause. Technicians come and go as their added experience leads them to higher wages. The task of teaching new candidates where the field is limited by low wages is a constant source of heartbreak. Adequately prepared technicians should be given a salary commensurate with their training and experience with further advancement when experience has been gained, so that properly qualified personnel may be attracted to this most important and expanding field.

Unless this specialty is given its proper place in the hospital as a separate service like radiology, pathology, anesthesiology, cardiology, urology, surgery, etc., it cannot continue on a high level and, therefore, patients will suffer. Other departments are overcrowded, their directors cannot give the time and energy to studying case histories, interviewing patients and physicians, testing out special technics, keeping up with advances. The proper application of physical meas-

ures is more time consuming than any other treatment and requires a special degree of patience, understanding, care and skill. So, the direction of this service cannot be delegated to medicine, surgery, orthopaedics, neurology or any other service in a Class-A hospital where physical medicine serves all other departments.

In 1939, in New York and vicinity, finding a community of interests because of their unique status in practice, in institutions, the four specialties of Pathology, Radiology, Anaesthesiology and Physical Medicine became members of a Joint Council to study their respective relations to other branches of Medicine, their present status in hospital, institution and Blue Cross Plans and what could be done to increase their numbers since young men and women frankly said they were not embracing these specialties because there was no future in them, the financial returns were totally inadequate for the years spent in medical preparation and practice and then in specializing.

Fellow physicians as a whole regard these four specialties as on a lower plane than those they themselves practice. They are not concerned as to the financial returns required to remain in these specialties, the wear and tear on nerves and health, the time and energy required to keep up with new discoveries and to promote research if so geared. They rather regard practitioners of these specialties as technicians, necessary to the proper conduct of their own particular fields but easily replaceable if too independent.

This is not true—there is an alarming dearth of candidates for these four specialties. Many do not continue because they resent 1) the appellation of hospital hirelings sometimes applied to them, 2) the inadequate recognition of their most necessary services by those who could not proceed without them, 3) the attitude of some patients who object to separate bills rendered because they have not been told of the importance of their services and 4) the taking for granted of themselves and their work by those institutions who have no hesitation in exploiting them. In one hospital, the pathologist was receiving \$75.00 a month, the hospital was collecting \$70,000 in yearly fees. In another, the anaesthesiologist was receiving a salary in hundreds of dollars while the hospital was collecting many thousands.

Over the years, the Joint Council of Pathologists, Radiologists, Anesthesiologists and Physiatrists has tried to induce fellow physicians to view with an impartial eye the needs of these workers, to put themselves in their places, to regard them as on an equal standing. Blue Cross Plans have been asked to omit these specialties as part of their contract by the Council of the Medical Society of New York State, California and the American Medical Association. Some physicians on these Boards do not realize they are acting for the profession, not for themselves and should stand by the physician who is bearing the brunt of the first frontal attack for socialized medicine.

MADGE C. L. MCGUINNESS, M.D., Chairmna.
JOHN S. HIBBEN, M.D.
MILTON G. SCHMITT, M.D.

Supplement to Report of Committee on Medical Economies

The Joint Council, Pathology, Radiology, Anaesthesiology and Physical Therapy Physicians, Recognition for Physical Medicine. — The Joint Council of the above specialties is pleased to report that the Resolution introduced by Dr. Thomas A. McGoldrick at the recent session of the American Medical Association at Cleveland after due consideration, was recommended by the Reference Committee on Medical Education, Dr. Walter G. Phippen, Chairman, as reported in the Journal of the American Medical Association on page 2785, June 21, 1941.

The full context appears on page 2700 of the June 14 issue and is hereby appended.

The amended Resolution which appears on page 2785, June 21 issue, reads as follows:

RESOLVED, That in order to improve hospital service and the practice of medicine it is recommended that, wherever obtainable, hospitals should have doctors of medicine especially trained in pathology, radiology, anesthesiology and physical medicine as directors in charge of these respective departments and that the directors of these departments shall be eligible for membership on their respective medical staffs or medical boards with voice and vote.

Medical Society of the State of New York, Council Committee on Public Relations and Economics, February 25, 1944. Dr. M. J. Fein, 30 East 40th Street, New York, N. Y.

Dear Doctor Fein:

At a regular meeting of the Council of the Medical Society of the State of New York on February 10, 1944, the following resolution was adopted:

"That the Council of the Medical Society of the State of New York reaffirms its own posi-

tion and that of the American Medical Association in opposing the inclusion of pathology, radiology, anesthesia, physical therapy, or any other form of the practice of medicine in a voluntary Hospitalization or Blue Cross Insurance Plan. It is opposed to hospitals accepting contracts of this kind, and it proposes that these insurance contracts for medical services be cared for by the voluntary, non-profit medical care plan."

We are asking the Secretary of the Medical Society of the State of New York to announce this resolution to the presidents of the boards of New York State hospitals and to the superintendents of New York State hospitals, and also hospital plan organizations. I shall appreciate it if you will take the necessary steps to inform the pertinent organizations you are connected with in regard to this action.

Very truly yours,

HERBERT H. BAUCKUS, M.D.

A correction. — In order that there may be no misunderstanding as to where the Medical Society of the County of New York stands on the question of the "all inclusive contract" of the Associated Hospital Service of New York, let it be known by everyone that this County Society is in harmony and agreement with the published principles of the Medical Society of the State of New York and the American Medical Association.* The Medical Society of the County of New York is opposed to the inclusion of any form of medical practice, including pathology, radiology, anaesthesiology and physical therapy, in any hospital service contract. It is not a policy of this Society to condone the violation of Article IX-c of the Insurance Law.

* J. A. M. A., page 619, June 28, 1943. Bauer Committee report. N. Y. S. J. M., page 749, June 19, 1937. Restatement of Booth Committee report.



MEDICAL NEWS

Dr. Van Riper Appointed Medical Director National Foundation

Dr. Hart E. Van Riper, of Scarsdale, N. Y., has been appointed medical director of the National Foundation for Infantile Paralysis. Dr. Van Riper has served as acting medical director since January.

The appointment was made to fill the vacancy created by the death of Dr. Don W. Gudakunst earlier this year. Dr. Van Riper will guide the National Foundation's extensive program for research, education and medical care and treatment for infantile paralysis patients throughout the nation.

Widely experienced in public health and welfare administrative work, Dr. Van Riper joined the National Foundation's staff last October as assistant to Dr. Gudakunst, the organization's medical director. On the latter's death in January, Dr. Van Riper became acting head of the medical department.

Before joining the Foundation staff he was medical director of the Jackson Memorial Hospital, Miami, Fla., and prior to that for approximately three years was assistant director for maternal and child health in the U. S. Department of Labor's Division of Health Services.

He is a Fellow of the American Academy of Pediatrics, a member of the American Public Health Association, and certified by the American Board of Pediatrics.

Surplus Army Hospitals Released to Veterans Administration

The Army's great general hospitals, built to the latest medical and surgical standards for the care and treatment of its wounded and sick during the war, are being released as rapidly as the decrease in the patient load justified and offered first to the Veterans Administration for its rapidly expanding program for medical care for veterans.

When three general hospitals housing paraplegic centers, McGuire at Richmond, Virginia; Birmingham at Van Nuys, California; and Vaughan at Hines, Illinois, were released to the Veterans Administration on April 1, 1946, special equipment for the treatment of the paraplegic patients remained in the hospitals in addition to the standard equipment turned over in all cases to the Veterans Administration. A part of this special equipment included wheel chairs, walking apparatus, special headphones for built-in radios and shop facilities used in training the patients who are paralyzed in the lower half of their bodies.

Army hospitals also stand ready with out-patient treatment for veterans with service-connected disability in isolated areas or emergency cases where civilian hospital facilities are not imme-

diately available. Out-patient treatment for veterans is also practiced in Puerto Rico, Alaska, and the Philippine Islands.

Several Army hospitals were erected by the Army with an eye toward future occupancy by the Veterans Administration. Both Vaughan and McGuire General Hospitals, housing paraplegic centers, were constructed with this in mind. In fact, Vaughan General Hospital was erected upon Veterans Administration property. Although the wards and buildings were built according to Army specifications, they can be changed in minor aspects to fit Veterans Administration needs. Kitchens, mess halls and clinic rooms are a few of the features that vary.

The 11 General Hospitals which already have been released to the Veterans Administration with all equipment are: Ashbourn, McKinney, Texas; Foster, Jackson, Mississippi; La Garde, New Orleans, Louisiana; Thayer, Nashville, Tennessee; Winter, Topeka, Kansas; Birmingham, Van Nuys, California; Finney, Thomasville, Georgia; McCloskey, Temple, Texas; McGuire, Richmond, Virginia; Nichols, Louisville, Kentucky; and Vaughan, Hines, Illinois.

Three Military Hospitals Named for Medical Department Dead

Army hospitals in Massachusetts, California and Florida were renamed in honor of a deceased medical corpsman, a general and a colonel who hold niches in the Medical Department hall of fame.

Secretary of War Robert P. Patterson officially redesignated Waltham Regional Hospital, Waltham, Massachusetts, as Murphy General Hospital. Pasadena Area Regional Hospital, Pasadena, California, is now McCormack General Hospital, and AAF Regional and Convalescent Hospital, Coral Gables, Florida, is Pratt General Hospital.

Private First Class Frederick C. Murphy, awarded posthumously the Nation's highest honor, the Congressional Medal of Honor, died as the result of battle wounds in March, 1945, near Saarlautern, Germany, in the assault against the Siegfried Line.

Brigadier General Condon, Carlton McCormack was retired from active duty on May 31, 1944, when Deputy Chief of Staff, Western Defense Command. He had a long and distinguished career dating back to 1898 when he served a hitch in Company C, 2nd Oregon Volunteer Infantry, as a private.

Colonel Fabian L. Pratt, after 21 months overseas during World War I as first lieutenant, Medical Reserve Corps, where he served with the Royal Army Medical Corps, was commissioned a first lieutenant, Regular Army, on July 1, 1920. Keenly interested in aviation, Colonel Pratt early

qualified as "balloon observer and airship pilot" to become one of the pioneer flight surgeons of the Army. He was one of the first to become a pilot in his own right.

He died on December 18, 1944, while serving as Surgeon, 4th Air Force, Hamilton Field, California.

Medical Fraud

Phurcerol Company. — This Chicago concern is reported to have had one Charles L. Cremieux as president and superintendent, and an Irene Drew as vice-president and general manager. Through the mails it sold Phurcerol as an external remedy for "arthritis, rheumatism, muscular aches and pains," which nostrum was described on the company's letterhead as "The Wonder Sulphur for Arthritis." According to federal investigators, the business was started about July, 1941, and reached its clientele through newspaper advertising in small cities and towns. Those who replied received a form-letter and a descriptive pamphlet. The former claimed that the product had been "carefully tried out on a large number of stubborn cases" and "the results have been truly amazing." It went on to claim that "all those who were given treatment were aware of improvement, and in some cases where the patients had been bed ridden, they found themselves able to walk again." There was the further claim: "Phurcerol has been approved by the U. S. Food and Drug Administration"! Finally the concern was ordered by the Post Office Department to show cause why it should not be debarred from the mails on the ground that it conducted a fraud. At the hearing a government chemist testified that his analysis of a specimen of Phurcerol obtained through test correspondence showed it to be a yellowish-red liquid consisting of a hydroalcoholic solution of about 1 per cent isopropyl alcohol and glycerin, with 11 grams of potassium sulfide in the four-ounce bottle, and some flavoring. Another government witness, a Senior Medical Officer for the Food and Drug Administration, testified that in the treatment of arthritis, complete diagnostic measures should be taken to determine the type of the disease and any existing complications. He showed that there is no one course of treatment for all the various types of arthritis and their complications, and hence each sufferer requires individualized therapy. He further showed that the potassium sulfide in the mixture was the only drug present in sufficient strength to have any effect worth considering, and that the sulfur or sulfides present could not be absorbed into the skin to any appreciable extent, and even if they were, they would be of no value to the system. His final testimony was that he could find no evidence in the files of the Food and Drug Administration that that agency had approved Phurcerol, and that, on the contrary, it had notified the defendants by letter "that this preparation should not be considered as a good remedy or an effective treatment for arthritis and rheumatism, and that labeling it as such would be considered by the officials to be misbranding under the Food, Drug and Cosmetics Act." No defense was offered by the re-

spondents, who neither appeared at the hearing nor were represented by counsel, though the latter did declare in a letter to the Post Office Department that his clients had made no extensive progress in marketing Phurcerol and hence had discontinued the advertising and sale of it through the mails. Since the charges were found to be sustained by the evidence, a fraud order was recommended, and this was issued on June 8, 1944, against the Phurcerol Company, Irene Drew, C. Cremieux and their officers and agents. — Rep. J. A. M. A. 131:700 (June 22) 1946.

New Era for Rehabilitation Program VA Hospitals *

The medical rehabilitation program being planned for Veterans Administration hospitals was officially activated by publication of a circular establishing a rehabilitation program in all VA hospitals.

Before Gen. Omar N. Bradley became Administrator of Veterans' Affairs, the activities of medical rehabilitation in the VA were confirmed largely to physical and occupational therapy. In a few hospitals, which had progressive managers and competent therapists, these programs were adequate.

In most cases, however, occupational therapy was conducted for the benefit of the hospital rather than the patient. Men shoveled coal, cut grass, and repaired furniture for the hospital and even the homes of staff personnel. This was known as "work therapy" but the primary emphasis was on the "work," with not too much regard for the "therapy."

Eight months ago when General Hawley was brought back from his post as Surgeon of the ETO to head the medical services of the VA, one of his first tasks was to find a man who had both the medical and administrative experience necessary to bring into the barren VA hospitals the aggressive, dynamic programs of rehabilitation and convalescent care that had proved so successful in military and naval hospitals.

For this position he chose Dr. Donald A. Covalt, of Muncie, Ind., who was at that time in charge of the Army Air Forces convalescent-rehabilitation program. The wisdom of his choice is shown by the solid basic policies that Dr. Covalt and his staff have established.

In addition to providing more opportunity for physical and occupational therapy the new program includes corrective physical rehabilitation, pre-vocational shop retraining, educational retraining, and special programs for the patients with spinal cord injuries, blind patients, and those suffering hearing disabilities.

Staffs composed of physical medicine specialists, physical therapists, occupational therapists, physical educators and instructors, will vary from eleven in a hospital of 150 beds up to 116 in a 2,000-bed hospital. The number assigned will also be dependent on the function of the hospital, whether general medical and surgical neuropsychiatric, or tuberculosis.

* Howard Rusk, *New York Times*, June 6, 1946.

BOOK REVIEWS

OFFICE TREATMENT OF THE NOSE, THROAT AND EAR. By *Abraham R. Hollender*, M.Sc., M.D., F.A.C.S., Professor of Otolaryngology, University of Illinois College of Medicine; Otolaryngologist, Research and Educational Hospitals, Chicago, Illinois. Cloth. Price, \$6.00. Pp. 552, with 140 illustrations. Chicago: The Year Book Publishers, Inc., 1946.

The first edition of this text published three years ago has been hailed with general approval. In the second edition the author has made every effort to keep pace with the rapidly changing trends in otolaryngologic therapy. The five main parts of the present volume are: General survey presenting the various forms of treatment; diseases of the nose the paranasal sinuses of the mouth and pharynx, of the larynx, of the ear; nervous disorders. A new chapter dealing with various types and causes of headaches has been added. The primary object of the book, office treatment, has been constantly kept in mind. This is a concise, authoritative, and above all eminently practical volume which should appear in many more editions.

ANNUAL REVIEW OF PHYSIOLOGY. By *James Murray Luck*, Editor, Stanford University; *Victor E. Hall*, Associate Editor, Stanford University. Vol. 8. Cloth. Price, \$5.00. Pp. 658. Stanford University P. O., California: American Physiological Society and Annual Reviews, Inc., 1946.

Because the Annual Review of Physiology has such a well earned reputation its publication is always awaited with interest. This particular volume has maintained the high standards set by previous editions. Altogether there are twenty-five reviews. These reviews are not merely a compilation of articles published but also include a critical analysis of the data presented.

Of special interest to physiologists will be the review of ultraviolet radiation by Hollaender of the U. S. Public Service, Bethesda, Maryland. He discusses, in this article, ultraviolet microscopy. Of importance is the evaluation of radiation of 2537 angstroms. The effect of ultraviolet radiation on bacteria and fungi is discussed. The carcinogenic effects of radiation are not overlooked. The irradiation of blood (Knott technic) is also evaluated and should be read by all those interested in this controversial subject. Air disinfection is also another topic that is well evaluated by Hollaender and inasmuch as this subject is gaining much attention at present should be read by all clinicians. Another valuable review is by Brobeck on "Heat and Cold." The effects of working in extreme temperatures and humidity are thoroughly discussed. The therapeutic use

of heat is, however, disappointing. It would seem, for instance, the author is totally unaware of the physiologic studies on therapeutic fever done in this country. He cites only one author from Great Britain in this field. However, the subject of "Cold" is well presented especially its therapeutic use. Another excellent review is by Bishop in Nerve and Synaptic Conduction. Other important contributions are Liver and Bile by S. Freeman, "Shock" by Gregersen; Aviation Physiology by Gemmill, and Blood Coagulation, Thrombosis, and Hemorrhagic Disorders by Ferguson. This valuable volume is a must for every physician and should be in the library of every physical therapist.

A BIBLIOGRAPHY OF INFANTILE PARALYSIS. 1789-1944. WITH SELECTED ABSTRACTS AND ANNOTATIONS. Prepared under direction of The National Foundation for Infantile Paralysis, Inc. Edited by *Morris Fishbein*, M.D., Editor, *The Journal of the American Medical Association*. Compiled by *Ludvig Hektoen*, M.D., Chief Editor, *Archives of Pathology*, and *Ella M. Salmonsén*, Medical Reference Librarian, John Crerar Library, Chicago. Fabricoid. Pp. 672. Price, \$15.00. Philadelphia: J. B. Lippincott Company, 1946.

All Physical Therapists and others interested in poliomyelitis will welcome this outstanding contribution to the medical literature. Eight thousand three hundred and twenty papers have been cited and brief abstracts of the important contributions are included. There is an index of authors and a complete subject index as well. The type, although small, is easily read because of adequate spacing. Every investigator in the field will want this volume on his reference shelf.

TREATMENT BY ION TRANSFER (IONTO-PHORESIS). By *D. Abramowitsch*, M.D., Physician in Charge of the Physiotherapy Department, Lincoln Hospital, New York City, and *B. Neoussikine*, M.D., Tel Aviv. Cloth. Price, \$4.50. Pp. 186. New York: Grune & Stratton, 1946.

The authors of this volume have performed a useful service in compiling the physical and clinical facts of treatment by ion transfer. Dr. Abramowitsch has brought from abroad an extensive knowledge of the clinical uses of ion transfer on the continent of Europe and has included in his presentation an account of the newer work on ion transfer in the United States. Although a good deal of the imposing amount of material presented is based only on clinical observation, it should nevertheless prove stimulating because of its wide scope. Part I discusses the physical characteristics of the electric current, the effect of electrolytically introduced drugs and the meth-

ods and technic of treatment. Part II is devoted to the treatment of individual diseases ranging from diseases of the nervous system (including hemiplegia, poliomyelitis, facial paralysis, neuralgia) to arthritis, lumbago, the treatment of scars, dermatological conditions, diseases of the genitalia, diseases of the eye, ear, nose and throat and dental conditions. It is the consensus of competent clinicians that ion transfer offers many therapeutic possibilities which make more extensive use and more controlled clinical investigation desirable. It is to be hoped that the publication of this volume will draw the attention of the medical profession to the comparative simplicity and efficiency of the use of ion transfer in the treatment of a number of conditions in many departments of medicine.

MODERN MANAGEMENT IN CLINICAL MEDICINE. By *F. Kenneth Albrecht*, M.D., S.A. Surgeon, U. S. Public Health Service; Kansas State Tuberculosis Consultant; Formerly Clinical Director, U. S. Marine Hospital, Baltimore, Md. With a foreword by *Alphonse McMahon*, Commodore, Medical Corp, U. S. Naval Reserve, Chief of Medicine, U. S. Naval Hospital, Bethesda, Md. Cloth. Price, \$10.00. Pp. 1238, with numerous illustrations, many in colors. Baltimore: The Williams & Wilkins Co., 1946.

This is a new book in general medicine which deviates from the usual pattern in presentation. It attempts to cover the entire field for a general practitioner. The customary discussion of the diseases is covered as well as chapters on skin disorders, geriatrics, care of the ambulatory patient, infectious diseases of post-war importance, chemotherapy, clinical laboratory medicine and an appendix which covers such items as diets, passage of sounds, thoracentesis, lifting and turning of patients, etc. New features are found which are commendable but there are others which need criticism. The occasional use of trade names for drugs is certainly undesirable. The metric system is employed in some chapters whereas the apothecary is used in others. The tables for differentiation of diseases are numerous; many are good but often they are confusing and defeat their purpose; for example, a table distinguishes Hodgkin's disease from lymphosarcoma, reticulum cell sarcoma and giant follicle lymphoma. Another differentiates gonorrheal arthritis from rheumatic fever and rheumatoid arthritis with the use of seventeen different items, and the table on the differential diagnosis of adrenal tumors includes arrhemoblastoma of ovary and thymic carcinoma which is certainly rare. Even the footnote comments that "only 4 cases reported." The consideration of physical medicine is most meager; for example in the rheumatic conditions the author de-

votes approximately one-half page. Occupational therapy is covered by one short paragraph and with statements which make it obvious that the author does not know the value of these measures. The book errs on being too ambitious.

THE OSSEOUS SYSTEM. A HANDBOOK OF ROENTGEN DIAGNOSIS. By *Vincent W. Archer*, M.D., Professor of Roentgenology, University of Virginia Department of Medicine. Cloth. Price, \$5.50. Pp. 320 with numerous illustrations. Chicago: Year Book Publishers, 1945.

This is another excellent book in the series of roentgen diagnosis by this publisher who is to be complimented on presenting these works which fill a definite need. The volume is confined to the bones exclusive of the joints and contains five chapters as follows: 1. Technic, principles of interpretations, roentgen anatomy; 2, injuries to the skeletal system other than the spine; 3, spine; 4, bone diseases and abnormalities in children, and 5, bone diseases occurring principally in adult life. In the chapter on injuries the various bones are considered individually and an important feature is the paragraphs on "confusing appearances" which alone would make the book worth while. It is refreshing to find the following quotation in comments on herniated disks "as a radiologist the author would much prefer a preliminary skilled neurosurgical examination to radiologic examination with contrast medium." If only more radiologists and neurosurgeons would agree with this author, the subsequent damage from radio opaque oils would be lessened.

The reproductions of the roentgenograms are clear and instructive. The spine films are the least satisfactory but then this is too often true in the original films. The author has produced a book which should be most valuable to all practitioners who take their own roentgenograms and to all the other physicians who have anything to do with patients.

THE PRINCIPLES OF HEREDITY. By *Lawrence H. Snyder*, Sc.D., Professor of Zoology and Chairman of the Department, The Ohio State University. Third Edition. Cloth. Price, \$3.75. Pp. 450 with 155 illustrations. Boston. D. C. Heath & Co., 1946.

This outstanding text is again revised and brought up-to-date. The commendable features of the earlier editions are retained. Several chapters have been rewritten and the latest ideas and developments of this science have been incorporated into the older chapters. This is a recognized authority on the subject and should be valuable not only to the student but to anyone who wishes a clear and fundamental presentation of the principles of heredity. The popularity of this work attests to its excellence.

PHYSICAL MEDICINE ABSTRACTS

An Analysis of 200 Cases of Arthritis Admitted to an Army General Hospital. Kenneth Goldstein.

New York State J. Med. 46:734 (April 1) 1946.

An analysis of 200 cases of arthritis in the General Medical Section of a Medical Service in an Army General Hospital is presented. These cases were observed over a period of one and a half years. During this time there were admitted to the Medical Service 5,524 cases, of which arthritis and its allied disorders occurred in 3.6 per cent.

All of the cases were classified and careful observations made during their hospital stays as to predisposing causes, symptomatology, physical signs, laboratory and x-ray observations.

A provocative walking test employing the sedimentation rate has been described to aid in the early diagnosis of rheumatoid arthritis. Osteoarthritis was the most prevalent of the arthritic diseases, with rheumatoid arthritis and fibrositis following in that order. Climate and adverse influence of service manifestly have been strong factors in precipitating signs and symptoms in osteoarthritis, rheumatoid arthritis and fibrositis. Most of the patients with osteoarthritis had involvement of the spine. Those who had rheumatoid arthritis were affected principally in the small joints of the hands, second the wrists and third the knees and ankles.

Seventy-one per cent of our cases of rheumatoid arthritis had constitutional symptoms and 93 per cent showed an elevated sedimentation rate. Seventy-six per cent of the patients with osteoarthritis had symptoms; all of them demonstrated positive objective findings.

Conservative management with recognized measures of therapy resulted in improvement in the greater number of the patients with arthritis

A Neuropathological Study of Acute Human Poliomyelitis With Special Reference to the Initial Lesion and to Various Potential Portals of Entry. Harold K. Faber, and Rosalie J. Silverberg.

J. Exper. Med. 33:352 (April 1) 1946.

The peripheral and central nervous tissues of eight patients dying of acute poliomyelitis were examined histologically to discover whether and to what extent the distribution of lesions was consistent with the hypothesis that virus enters the mucous membranes through the superficial nerve fibers, infects the neurons in peripheral ganglia, and proceeds thence into the central nervous system to infect connecting centers. Evidence consistent with this hypothesis was found in all cases. Based on concurrent lesions of the primary and secondary centers, the frequency of involvement of the various systems and the prob-

ability of their having acted as primary pathways for entering infection may be summarized as follows:

(a) Trigeminal afferent system (V cranial): very frequent.

(b) Visceral afferent system (IX and X cranial): fairly common but less than V.

(c) Gustatory system (VII, IX, and X Cranial): occasional.

(d) Sympathetic system, upper levels (pharynx, bronchial tree, upper esophagus): occasional.

(e) Sympathetic system, lower (intestine): occasional or doubtful.

(f) Vagal efferent (parasympathetic) system (X cranial) and olfactory (I cranial) system: uninvolved.

In general, the evidence of penetration through the upper alimentary and respiratory tracts was more conspicuous and consistent than through the lower alimentary tract. The pharynx appears to be an especially favorable site for the primary penetration of virus into the body.

The data suggests that the primary lesion of poliomyelitis occurs in the peripheral ganglia. Primary invasion through the sympathetics results in initial involvement of the central nervous system at the spinal level; invasion through all the other channels described results in initial involvement of the central nervous system at the level of the brainstem (midbrain, pons, medulla). In neither instance does the level of initial involvement necessarily determine the site of initial paralysis.

Physical Medicine in the Army. Its Effect on Civil Practice. J. W. T. Patterson.

Proc. Roy. Soc. Med. 39:150 (Feb.) 1946.

Successful rehabilitation depends on a thorough coordination of all remedial measures from the bedside, through ambulatory convalescence, right up to final reinstatement. Reduction in the period of convalescence is just as important as the reduction in the duration of hospitalization. The latter has been brought home to the profession through the shortage of hospital accommodation. The former is equally important from the point of view of industry and from that of the patients' economic circumstances.

The medical profession must be prepared to study and disseminate knowledge in what are the most effective measures for rapid and complete restoration after disability and must be prepared to condemn all personal idiosyncracies in regard to methods which are proved to be wasteful and less than fully effective.

Successful rehabilitation demands a thorough knowledge of all the operations involved in the employment for which the individual is being prepared and involves the rehabilitation of the

whole man, psychologic and social as well as physical.

The medical profession must be made to realize the importance of job analysis. It should busy itself with the investigation of job analysis from a medical point of view so that, among other considerations, its rehabilitation work shall be more purposeful and more scientific. Medicine must be prepared to advise on the capacity in which a permanently disabled person may be most adequately and suitably employed. Medicine must be brought to realize the importance of physical education and its interest and supervision enlisted in this highly effective factor in the maintenance and achievement of physical efficiency and must be prepared to extend its preventive aspect more completely. It must investigate and adjudicate on all measures likely to improve and maintain health in addition to concentrating on established disease processes. Such a preventive outlook demands investigation of the so-called normal, seeking to establish those ranges of normality, outside which preventive measures must be undertaken to avoid ultimate disability.

Under-Water Blast Injury of the Abdomen. Wilfred Kark.

J. Roy. Army M. Corps 86:64 (Feb.) 1946.

During this war there have been a number of reports on the clinical aspects and also on experimental studies of the injuries caused by under-water blast. There are conflicting theories on the mechanism of injury, and there are differences of opinion about treatment. Two personal cases, both operated on in the earlier days of the war, seem worthy of record as they may provide some evidence in a discussion of opposing views.

Both cases were involved in an incident which occurred during the Dunkirk evacuation. Neither of the men concerned had suffered previous injury nor were they injured when they left the deck of their mined vessel. While swimming some distance away from the sinking ship, both men felt the impact of detonating depth charges which had become submerged with the ship. They were rescued and brought to the hospital about twelve hours later.

Cutaneous Distribution of Peripheral Nerves in Rhesus Monkeys as Determined by the Electrical Skin Resistance Method. S. R. Bruesch, and Curt P. Richter.

Bull. Johns Hopkins Hosp. 78:235 (April) 1946.

Previous publications from this laboratory have demonstrated that the cutaneous distribution of sympathetic nerve fibers can be studied by the electrical skin resistance method. The technic is based on the principle that the resistance offered by normal skin to the passage of a minute direct current is related to the activity of sweat glands.

Disturbances in sweat secretion in rhesus mon-

keys following transection of a peripheral nerve cause an elevation of the resistance of the skin to the passage of an electric current.

The elevation of resistance varies from being sufficiently high to cause almost no flow of current in the circuit to a state where the amount of flow is only slightly less than in normally innervated skin.

The borders of areas of elevated skin resistance are static for only short periods of time. Immediately following section of a peripheral nerve, the area of high resistance is maximal. Soon, often 24 hours or less postoperatively, there may be detected a lowering of resistance at the periphery of the area of high resistance. The area of high resistance which remains after this initial lowering of resistance about its periphery thus represents the autonomous zone of the blocked nerve. In many nerves, particularly those supplying more distal portions of the extremities, a further lowering of resistance about the periphery of the area of high resistance becomes prominent at 14 to 21 postoperative days. The possibility of this lowering being due to ingrowth of sudorific fibers from adjacent intact nerves is suggested by the chronology and symmetrically peripheral location of the change.

A slow shrinkage of the borders of the remaining pattern of high resistance occurs over a period of three to six months, depending on the nerve and the level of transection and suture. This process results in the disappearance of the region of elevated skin resistance. This final slow shrinkage is interpreted as a functional manifestation of regeneration of the sudorific nerve fibers through the sectioned nerve.

Functional Job Analysis. H. Ernest Griffiths.

Brit. J. Phys. Med. 9:43 (March-April) 1946.

The problem of the fitting of the able-bodied man into his proper niche in industry is one which has been exercising the minds of the industrial psychologists more and more during the last thirty years; but why the psychologists? The answer is a simple one: because the muscles and joints of the able-bodied workman are physically fit to perform any normal operation which his brain is able to direct. Selection of the candidates for the jobs, then, have depended on educational standard and adaptability, and various forms of aptitude tests have been devised for their grading. These tests, intelligently applied, have already proved their value, particularly in relation to the more skilled jobs and to executive posts.

Job analysis in relation to placement has, therefore, been mainly confined to the determination of the intelligence quota of the operative. Other aspects of job analysis are related to production or to safety, to the elimination of unnecessary movement or of the duplication of effort, to the cultivation of rhythm and to the design of safety guards.

PRELIMINARY PROGRAM

TWENTY-FOURTH ANNUAL SCIENTIFIC SESSION

AND

INSTRUCTION COURSE

American Congress of Physical Medicine

September 4, 5, 6, 7, 1946

HOTEL PENNSYLVANIA, NEW YORK, N. Y.

SCHEDULE OF INSTRUCTION COURSE

WEDNESDAY, SEPTEMBER 4

- 8:00 to 9:00—(1) *Peripheral Nerve Injuries (Physiologic Studies)*. HINES.
 8:00 to 9:00—(2) *Anatomical Reasons for Foot Strain (Treatment)*. FRANCES BAKER.
 9:00 to 10:00—(3) *Pain (Types: Neurotic, radiating or Referred, Causalgic, Ischemic)*. HARPUDER.
 9:00 to 10:00—(4) *Low Back Pain (Anatomical and Mechanical Basis)*. JESSIE WRIGHT.
 1:00 to 8:00—(5) *Functional Anatomy of the Shoulder Girdle*. OUIRING.
 1:00 to 2:00—(6) *Functional Anatomy of the Hand*. MARBLE.

THURSDAY SEPTEMBER 5

- 8:00 to 9:00—(7) *Physiologic Basis for Therapeutic Exercise*. FRANCES HELLEBRANDT.
 8:00 to 9:00—(8) *Fundamentals of Electricity as Applied to Physical Medicine*. LION.
 9:00 to 10:00—(9) *Reconditioning in Certain Medical and Surgical Conditions (Cardiacs, Chest Surgery)*. HUDDLESTON.
 9:00 to 10:00—(10) *Prescription Writing in Physical Medicine*. MARTIN.
 1:00 to 2:00—(11) *Essentials of Muscle Reeducation*. BENNETT.
 1:00 to 2:00—(12) *Lecture and/or Demonstration (Crutch Walking)*. DEEVER.

FRIDAY, SEPTEMBER 6

- 8:00 to 9:00—(13) *Rehabilitation of Industrial Injured*. AITKEN.
 8:00 to 9:00—(14) *Physical Therapy to Injuries of the Hand*. WATKINS.
 9:00 to 10:00—(15) *Electrical Stimulation of Denervated Muscle (With Actual Demonstration on a Model)*. OSBORNE.
 9:00 to 10:00—(16) *Use of Physical Therapy Following Various Fractures of the Extremities*. KNAPP.
 1:00 to 2:00—(17) *Rehabilitation of the Severely Disabled*. DEEVER.
 1:00 to 2:00—(18) *Hydrotherapy and Spas (Present Status)*. BEHREND.

LECTURERS FOR INSTRUCTION COURSE

ALEXANDER AITKEN, M.D., Medical Director, Rehabilitation Clinic, Liberty Mutual Insurance Company, Boston;

FRANCES BAKER, M.D., Assistant Clinical Professor, Orthopedic Surgery, University of California Medical School; Director, Department of Physical Medicine, University of California Hospital, San Francisco;

H. J. BEHREND, M.D., Lecturer, Physical Medicine, School of Education, New York University; and Associate, Physical Medicine Hospital for Joint Diseases, New York;

ROBERT L. BENNETT, M.D., Director, Physical Medicine, Georgia Warm Springs Foundation, Warm Springs, Ga.;

GEORGE G. DEEVER, M.D., Physician in Charge of Physical Medicine, New York University College of Medicine; Medical Director, Institute for the Crippled and Disabled, New York;

KARL HARPUDER, M.D., Assistant Clinical Professor of Medicine, Columbia University College Physicians and Surgeons; Attending Physician, Department Physical Medicine, Montefiore Hospital.

FRANCES A. HELLEBRANDT, M.D., Professor of Physical Medicine and Acting Director of the Baruch Center of Physical Medicine, Medical College of Virginia, Richmond, Va.;

HARRY M. HINES, Ph.D., Professor and Head, Department of Physiology, College of Medicine, State University of Iowa, Iowa City, Ia.;

ORA LEONARD HUDDLESTON, M.D., Associate Professor of Medicine and Director, Department Physical Medicine, University of Southern California School of Medicine;

MILAND E. KNAPP, M.D., Clinical Assistant Professor of Radiology and Physical Director, Department of Physical Therapy, University of Minnesota School of Medicine, Minneapolis;

KURT S. LION, D.Eng., Associate Professor of Applied Biophysics, Massachusetts Institute of Technology, Cambridge, Mass.;

HENRY CHASE MARBLE, M.D., Assistant in Surgery, Harvard University Medical School;

GORDON MATHER MARTIN, M.D., Assistant Professor of Medicine, University of Kansas Medical School, Kansas City, Kan.;

CHARLES O. MOLANDER, M.D., Associate in Physical Medicine, Northwestern University Medical School; Director Physical Medicine, Michael Reese Hospital, Chicago;

STAFFORD L. OSBORNE, Ph.D., Associate Professor of Physical Medicine, Northwestern University Medical School, Chicago;

DANIEL P. QUIRING, Ph.D., Associate Professor of Biology, Western Reserve University; Head, Anatomy Division, Cleveland Clinic, Cleveland;

ARTHUR L. WATKINS, M.D., Associate in Medicine, Harvard University Medical School; Chief of Physical Medicine, Massachusetts General Hospital, Boston;

JESSIE WRIGHT, M.D., Director, D. T. Watson School of Physical Therapy, Affiliated with the University of Pittsburgh School of Medicine, Pittsburgh.

Registration for specific courses cannot be guaranteed when quotas are filled.

Those who have not completed their registration should do so before attending any of the course sessions. No one will be permitted attendance at any of the course lectures without official registration card for the course. Registration for the course may be completed on Tuesday, September 3 at the Hotel Pennsylvania, registration desk of the Congress. Course lectures will commence promptly at 8:00 a. m., Wednesday.

GENERAL INFORMATION

RULES GOVERNING THE READING OF PAPERS

No paper or address before the Congress shall occupy more than twenty minutes in its delivery. The program is so arranged that all the time is utilized and it is therefore imperative that the stated time schedule is closely followed.

All papers read before the Congress shall be the property of the Congress for publication in the official journal. Each paper shall be deposited with the secretary of the section when read.

THE CONVENTION

The registration desk will be open at 10 a. m., Tuesday, September 3 for preconvention registration. It is important that everyone register before entering the lecture hall. Those not wearing the official badge will be refused admission. This meeting is not open to the public. No registration fee will be charged.

BUSINESS SESSIONS

The annual business meeting for the members of the Congress will be held Tuesday, September 3, at 8:00 p. m. in the Salle Moderne and on Wednesday, September 4, at 5 p. m., in the Salle Moderne.

CONGRESS DINNER

The annual Congress dinner will be held on Thursday evening, September 5 at 7 p. m. in the Georgian Room and dress is optional. Exhibitors and guests are welcome. Because of the difficulties in making plans for such occasions today it is imperative that you make a reservation. An interesting but brief after-dinner program has been arranged. You will enjoy this occasion, the only social function of the convention.

THE INSTRUCTION COURSE

The instruction course will be given from 8:00 to 9:00, 9:00 to 10:00 a. m., and from 1:00 to 2:00 p. m., on the days of Wednesday, Thursday and Friday during the convention week, enabling attendance at both the course and scientific session during the same period.

Each registrant for the course is allowed the choice of one lecture during a period, there being three instruction periods every day. Nine lectures may be selected from the eighteen that are listed. The charge for the complete schedule of nine lectures is \$15.00. Less than nine lectures may be scheduled at \$2.00 per lecture. The right is reserved to reject any application if the Course Committee finds it desirable to do so.

EDITORIAL BOARD

The annual meeting of the Editorial Board will be held Tuesday, September 3, 8:00 a. m., Breakfast.

EDUCATIONAL CONFERENCE

An entire afternoon has been set aside for the educational conference to be held Tuesday, September 3, from 2:00 to 5:00 p. m. The meeting has been designed primarily to give an opportunity to medical and technical directors of the various approved schools for training physical therapy technicians.

SOCIETY OF PHYSICAL MEDICINE

The Society of Physical Medicine will hold its annual meeting September 4, 12:30 Noon, luncheon. Prevailing restaurant conditions make it imperative that reservations be made in advance. If you are a member of this Society please make every effort to be present.

AMERICAN REGISTRY OF PHYSICAL THERAPY TECHNICIANS

The annual meeting of the Boards of the Registry will be held Thursday, 12:00 Noon, luncheon.

SCIENTIFIC EXHIBITS

Scientific exhibits will be on display again and should prove of great interest. As was the custom formerly, medals will be awarded to those exhibits which are adjudged the outstanding ones by the committee on scientific awards and will be announced at the annual congress dinner, Thursday, September 5.

TECHNICAL EXHIBITS

The program of the scientific sessions and instruction course has been arranged with intermission periods to give time for visits and inspection of the technical exhibits. As these exhibits have been arranged with considerable effort we urge every member and guest to set aside sufficient time for a complete tour of all exhibits. Exhibits will be open from 9:00 a. m. to 6:00 p. m.

APPLICATION FOR INSTRUCTION COURSE

In Conjunction with the
Twenty-Fourth Annual Scientific and Clinical Session
of the

AMERICAN CONGRESS OF PHYSICAL MEDICINE

September 4, 5, 6, 7, 1946

Hotel Pennsylvania, New York City

Name
(Print)

Address

(If physician, answer)

Are you a member of the A. M. A.?.....Are you
a member of your county medical society?.....

Give name of Co. Med. Soc.....

(If technician, answer)

Only members of the American Registry of Physical Therapy
Technicians are eligible to attend the course. Give Registra-
tion Serial Number.....

After reading the general information and schedule of
courses offered, make up the schedule you wish to take, list-
ing courses by hour and day; watch, please not to duplicate:

.....
Signature in ink.

Date.....

Please make check payable to and mail it with your
application to

American Congress of Physical Medicine
30 North Michigan Avenue Chicago 2, Illinois

GENERAL SCIENTIFIC SESSION

WEDNESDAY, September 4 — 10:30 A. M.

OFFICERS OF THE SECTION

Chairman — EMIL J. C. HILDENBRAND, Washington, D. C.
Secretary — WALTER M. SOLOMON, Cleveland.

Frequency-Intensity Curves of Normal and Paralyzed Muscles in Man.

HARRY D. BOUMAN, M.D., Assistant Professor of
Physical Medicine, Northwestern University Medical
School, Chicago;

JOEL KOSMAN, Ph.D., Assistant Professor of Physio-
logy, Northwestern University Medical School, Chicago;

STAFFORD L. OSBORNE, Ph.D., Associate Professor
of Physical Medicine, Northwestern University Medical
School, Chicago.

and

ANDREW C. IVY, Ph.D., Professor of Physiology,
Northwestern University Medical School, Chicago.

The Inductothermy of Nervous Tissue in the Intact Animal.

ROBERT DEWEY TAYLOR, M.D., Staff Physician,
Research Division, Cleveland Clinic Foundation, Cleve-
land.

The Role of the Physiologist in Physical Medicine.

WILBUR A. SELLE, M.D., Professor of Physiology,
University of Texas, School of Medicine, Galveston,
Texas.

A Poliomyelitis Program in a General Hospital.

JOSEPHINE J. BUCHANAN, M.D., Assistant Pro-
fessor, Physical Medicine, Medical College of Virginia,
Richmond, Va.

GENERAL SCIENTIFIC SESSION

WEDNESDAY, September 4 — 2:30 P. M.

OFFICERS OF THE SECTION

Chairman — WILLIAM H. SCHMIDT, Philadelphia.
Secretary — NATHAN H. POLMER, New Orleans.

A New Approach to Physical Medicine.

BEN L. BOYNTON, M.D., Plainview Clinic and Sani-
tarium, Plainview, Texas.

Therapeutic Exercises in Management of War In- juries.

CARL L. LEVENSON, M.D., Associate Senior Con-
sultant, Physical Medicine and Rehabilitation, Third
Branch Office, Veterans Administration, Chester, Pa.

Physical Therapy in the Management of Tendon Re- pair.

GEORGE D. WILSON, M.D., Consultant, Physical
Medicine, National Society for Crippled Children and
Adults, Asheville, N. C.

Rehabilitation of Patients with Spinal Cord Injuries.

LOUIS B. NEWMAN, M.D., Director, Medical Reha-
bilitation, Chief, Physical Medicine Service, Veterans
Administration Hospital, Hines, Ill.

Physical Medicine and Rehabilitation in the Veterans Administration.

DONALD A. COVALT, M.D., Assistant Medical Director, Medical Rehabilitation and Physical Medicine, Veterans Administration, Washington, D. C.

EVENING SESSION

WEDNESDAY, September 4 — 8:00 P. M.

OFFICERS OF THE SECTION

Chairman — MILAND E. KNAPP, Minneapolis.

Secretary — RICHARD KOVÁCS, New York, N. Y.

FORMAL OPENING OF THE 24TH ANNUAL SESSION

INVOCATION

ADDRESS OF WELCOME

INDUCTION OF PRESIDENT-ELECT

ADDRESS

Physical Medicine Facing Forward.

WALTER S. McCLELLAN, M.D., Saratoga Springs, N. Y.

Title to Be Announced.

GEORGE F. LULL, M.D., Secretary and General Manager, American Medical Association, Chicago.

The Influence of Muscle Action on Tissue Repair.

SIR MORTON SMART, K. C. V. O., D. S., M.D., Manipulative Surgeon to His Majesty the King; Consultant in Physical Medicine to the Royal Air Force, London, England.

SCIENTIFIC EXHIBITS

See Final Program
for announcement
of exhibitors
and description
of exhibits.

GENERAL SCIENTIFIC SESSION

THURSDAY, September 5 — 10:30 A. M.

OFFICERS OF THE SECTION

Chairman — WILLIAM BIERMAN, New York, N. Y.

Secretary — MAX NEWMAN, Detroit.

The Council on Physical Medicine.

HOWARD A. CARTER, M.E., Secretary, Council on Physical Medicine, American Medical Association, Chicago.

Reliability of the Single Effort Muscle Test.

ELLEN NEALL DUVAL, Ph.D., Research Associate, Baruch Center, Physical Medicine, Medical College of Virginia, Richmond,

and

SARA JANE HOUTZ, B.S., Instructor, Physical Therapy, Baruch Center Physical Medicine Medical College of Virginia, Richmond, Va.

Physical Medicine in Treatment of Rheumatoid Arthritis with Associated Xanthomas.

EVERILL W. FOWLKS, M.D., Chief, Physical Medicine Service, U. S. Veterans Administration, Portland, Oregon.

Psychiatric and Physiologic Studies on Fatigue: Preliminary Report.

ARTHUR L. WATKINS, M.D., Associate in Medicine, Harvard Medical School, Boston;

STANLEY COBB, M.D., Bullard Professor of Neuropathology, Harvard Medical School; Psychiatrist-in-Chief, Massachusetts General Hospital, Boston;

JACOB ELLIS FINESINGER, M.D., Assistant Professor in Psychiatry, Harvard Medical School, Boston;

MARY A. B. BRAZIER, Ph.D., Research Fellow in Neuropathology, Harvard Medical School, Boston;

HARLEY C. SHANDS, M.D., Research Fellow in Medicine, Harvard Medical School, Boston,

and

GREGORY PINCUS, D.Sc., Director of Laboratories, Worcester Foundation for Experimental Biology; Research Professor of Physiology, Tufts College Medical School, Shrewsbury, Mass.

GENERAL SCIENTIFIC SESSION

THURSDAY, September 5 — 2:30 P. M.

OFFICERS OF THE SECTION

Chairman — KRISTIAN G. HANSSON, New York, N. Y.

Secretary — MADGE C. L. MCGUINNESS, New York, N. Y.

Mis-Directed Physical Therapy in the Treatment of Amputations.

DONALD L. ROSE, M.D., Baruch Fellow in Physical Medicine; Formerly Consultant in Physical Therapy to the Surgeon General, Silver Springs, Md.

The Optimum Exercise-Rest Balance in the Management of Arthritis.

GEORGE MORRIS PERSOL, M.D., Professor Medicine, Graduate School; Professor of Clinical Medicine, School of Medicine; Director of Research and Instruction in Physical Medicine, University of Pennsylvania School of Medicine, Philadelphia,

and

JOSEPH L. HOLLANDER, M.D., Instructor of Medicine, School of Medicine, University of Pennsylvania; Director of the Arthritic Clinic, Hospital of the University of Pennsylvania; Philadelphia.

Vasomotor Adaptability and the Effect of Heat and Massage as Measured by the Cutaneous Temperatures of the Extremities of Normal Subjects and Patients Suffering with Rheumatoid Arthritis.

GORDON M. MARTIN, M.D., Assistant Professor of Medicine, University of Kansas Medical School, Kansas City, Kan.

Salient Observations on Physical Medicine in the Service.

HERMAN L. RUDOLPH, M.D., Formerly Chief Physical Medicine Service, Letterman General Hospital, San Francisco, Reading, Pa.

Physical Medicine in the Navy.

COMDR. HARRY S. ETTER, (MC), U. S. N., Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

A Community Rehabilitation Service and Center.

HOWARD A. RUSK, M.D. Staff, New York Times, New York, N. Y.

ANNUAL CONGRESS DINNER

THURSDAY, September 5 — 7:00 P. M.

TOASTMASTER: WALTER S. McCLELLAN, M.D., President

GUEST SPEAKERS

NORMAN T. KIRK, MAJOR GENERAL,
U. S. A., The Surgeon General

HOWARD H. MONTGOMERY, CAPT. (MC), U. S. NAVY,
Medical Officer in Command

DONALD A. COVALT, M.D.,
Assistant Medical Director, Medical Rehabilitation and
Physical Medicine, Veterans Administration

AWARDS

WILLIAM H. SCHMIDT, M.D.,
Chairman, Awards Committee

GENERAL SCIENTIFIC SESSION

BARUCH CONFERENCE

FRIDAY, September 6 — 9:00 A. M.

OFFICERS OF THE SECTION

Chairman — FRANK H. KRUSEN, Rochester, Minn.
Secretary — ARTHUR L. WATKINS, Boston.

Comparison of Normal and Pathologic Patterns of Muscular Activity.

JUDITH PARTRIDGE PRICE, Research Associate in Biophysics, Washington University School of Medicine, St. Louis.

Vertebral Changes Following Experimentally Produced Muscle Imbalance.

MERYL MILES, M.S., Instructor in Anatomy, Baruch Committee on Physical Medicine, Washington University School of Medicine, St. Louis.

Some Properties of Denervated Muscle.

SEDGWICK MEAD, M.D., Research Fellow in Physiology, Harvard Medical School; Baruch Fellow in Physical Medicine, Harvard Medical School and Massachusetts General Hospital, Boston.

The Evaluation of Disability and Treatment in Hemiplegia.

HAROLD DINKEN, M.D., Assistant Professor of Medicine, University of Colorado School of Medicine; Director of Physical Medicine, Colorado General Hospital, Denver.

Results of Combined Fever and Insulin Treatment in Schizophrenia.

WILLIAM A. HORWITZ, M.D., Associate in Psychiatry, Columbia University, College of Physicians and Surgeons, New York, N. Y.;

FRANZ J. KALLMANN, M.D., Associate in Psychiatry, Columbia University, College of Physicians and Surgeons, New York, N. Y.,

and

NICHOLAS KOPELOFF, M.D., Assistant Professor of Bacteriology, Columbia University, College of Physicians and Surgeons, New York, N. Y.

Measurement of Clinical Ultraviolet.

CLIFTON BERNARD COSBY, M.A., Assistant Professor of Biophysics, Baruch Center of Physical Medicine, Medical College of Virginia, Richmond, Va.

A Survey Method for Radiation Coverage of Infra-Red Generators.

LEOPOLD ROVNER, M.S. (Physics), State University of Iowa, School of Medicine, Iowa City, Iowa.

Blood Platelets and Vaso-Constriction as Factors in Spontaneous Hemostasis.

MARJORIE B. ZUCKER, M.D., Research Assistant, Department of Physiology, Baruch Committee on Physical Medicine, Columbia University College of Physicians and Surgeons, New York, N. Y.

GENERAL SCIENTIFIC SESSION

BARUCH CONFERENCE

FRIDAY, September 6 — 2:00 P. M.

OFFICERS OF THE SECTION

Chairman — HOWARD A. RUSK, New York, N. Y.
Secretary — DONALD A. COVALT, Washington, D. C.

Physical and Nervous Factors in Spontaneous Hemostasis.

FREDERICK J. KOTTKE, M.D., Baruch Research Fellow in Physical Medicine, Department of Physiology, University of Minnesota School of Medicine, Minneapolis.

The Effect of Low Temperature on Fluid Movement and Capillary Permeability in the Forearm.

CHARLES S. WISE, M.D., Baruch Fellow in Physical Medicine, Harvard Medical School Cambridge, Mass.;

ELLEN BROWN, M.D., Research Fellow, Physiology Commonwealth Fund, Harvard Medical School, Boston, and

EDWIN WHEELER, M.D., Assistant in Medicine, Massachusetts General Hospital, Boston.

Crossed Learning.

F. A. HELLEBRANDT, M.D., Professor, Physical Medicine and Acting Director, Baruch Center Physical Medicine, Medical College of Virginia, Richmond, Va.;

SARA JANE HOUTZ, B.S., Instructor, Physical Therapy, Baruch Center Physical Medicine, Medical College of Virginia, Richmond, Va.,

and

ANNIE M. PARRISH, B.S., Instructor, Physical Therapy, Baruch Center Physical Medicine, Medical College of Virginia, Richmond, Va.

The Evaluation of Disability and Rehabilitation Treatment of Paraplegics.

GEORGE G. DEEVER, M.D., Clinical Professor of Medicine, New York University Medical College; Medical Director, Institute Crippled and Disabled, New York, N. Y.

A Study of the Kinematics and Dynamics of the Human Gait and Its Application in Poliomyelitis.

IRVING REHMAN, Ph.D., Assistant Professor of Anatomy, Director University Southern California, School of Medicine, Research Project in Physical Medicine Under Baruch Foundation, Los Angeles.

An Early Progress Report on the Development of the Department of Physical Medicine at the University of Illinois College of Medicine.

H. WORLEY KENDELL, M.D., Baruch Fellow Physical Medicine, Section on Physical Medicine, Mayo Clinic, Rochester, Minn.

A Progress Report on the Development of the Department of Physical Medicine at the University of Southern California.

O. LEONARD HUDDLESTON, M.D., Associate Professor of Medicine, University Southern California, School of Medicine, Los Angeles.

A Report of the Progress in the Two Years Basic Development of the Department of the Organization and Integration of Clinical Physical Medicine and Research and Education.

WILLIAM B. SNOW, M.D., Assistant Professor of Medicine, Columbia University, College of Physicians and Surgeons, New York, N. Y.

The Growing Importance of Physics in the Premedical and Medical Curricula.

FRANCIS O. SCHMITT, Ph.D., Head Department of Biology, Massachusetts Institute of Technology, Cambridge, Mass.

GENERAL SCIENTIFIC SESSION

BARUCH CONFERENCE

SATURDAY, September 7—9:00 A. M.

OFFICERS OF THE SECTION

Chairman—FRANK OBER, Boston.
Secretary—O. LEONARD HUDDLESTON, Los Angeles.

Muscle Strength and the Weather.

ERNST FISCHER, M.D., Professor of Physiology, Baruch Center of Physical Medicine, Medical College of Virginia, Richmond, Va.

The Significance of Physical Fitness.

ROBERT C. DARLING, M.D., Associate Professor of Medicine, Columbia University, College of Physicians and Surgeons, New York, N. Y.

Ultraviolet, Infra-Red and Short Wave Dosimetry.

KURT S. LION, D. Eng., Associate Professor of Massachusetts Institute of Technology, Cambridge, Mass.

The Role of Circulatory Changes in the Effectiveness of Thermogenic Agents on Deep Tissues.

HARRY M. HINES, Ph.D., Professor and Head, Department Physiology, State University of Iowa School of Medicine, Iowa City, Iowa,
and

WILLIAM D. PAUL, M.D., Assistant Professor of Medicine, Director Department Physical Medicine, State University of Iowa School of Medicine, Iowa City, Iowa.

The Effect of Thermal Shock on the Voluntary Neuromuscular Apparatus.

EBEN J. CAREY, M.D., Dean and Professor of Anatomy, Marquette University School of Medicine, Milwaukee.

Temperature Equalization for the Relief of Pain.

HERBERT S. WELLS, M.D., Professor of Biophysics, University of Minnesota Medical School, Minneapolis.

Reactions of Normal Man to External Heat.

LUDWIG W. EICHNA, M.D., Associate Professor of Medicine, New York University College of Medicine, New York, N. Y.

TECHNICAL EXHIBITS

AMPEREX ELECTRONIC CORPORATION.

Amperex Electronic Corporation will have a display of a complete line of the most modern tube developments for use in short wave diathermy machines.

ARCHIVES OF PHYSICAL MEDICINE.

The leading publication in the field of physical medicine, issued monthly by the American Congress of Physical Medicine. Contains the scientific papers and addresses presented at the annual session. Other features consist of its abstract section, book reviews and physical medicine news. Subscriptions will be taken at the booth.

J. BEEBER COMPANY.

The J. Beeber Company will exhibit a complete line of x-ray and Physical Therapy apparatus including the new Whirlpool Baths and the latest model Short Wave Diathermy machines. Also the new Portable Model Beck Lee Electrocardiograph with seven leads and the Mattern line of x-ray will be displayed.

THE BURDICK CORPORATION.

The Burdick Corporation of Milton, Wisconsin, will exhibit their complete line of Physical Medicine equipment, including Short Wave Diathermy Units, Ultraviolet and Infra-Red Lamps and the Rhythmic Constrictor for the treatment of Peripheral Vascular Conditions. Physicians and technicians are invited to register for the Burdick Syllabus, a compilation of clinical material on the use of Physical Medicine equipment.

THE COCA-COLA COMPANY.

Coca-Cola will be served through the joint courtesy of the Coca-Cola Bottling Company of New York, Inc., and The Coca-Cola Company.

THE DIERKER COMPANY—MANUFACTURERS.

Dierker Therapeutic Apparatus for administering treatment and medication to accessible cavities; reprints of scientific papers by eminent clinicians who are users of the Dierker Apparatus will be available on request, 6529 Santa Monica Blvd., Los Angeles 38, Calif.

E & J MANUFACTURING COMPANY.

The E & J Manufacturing Company will exhibit the latest development in the E & J Resuscitator Inhalator and Aspirator. You are cordially invited to witness interesting demonstrations of resuscitation by both mask and intratracheal catheter.

H. G. FISCHER & CO.

After-the-war models of x-ray and electrosurgical medical equipment are still largely in the making. Visitors to the 24th Annual Scientific and Clinical Session are cordially invited to inspect the new FISCHER units already available. FISCHER representatives will be glad to answer any questions and to supply information. You will be welcome at our booth.

GENERAL ELECTRIC X-RAY CORPORATION.

General Electric X-Ray Corporation presents their electro-medical equipment incorporating recent changes and improvements designed to facilitate the therapeutic effectiveness of established apparatus.

Exhibit will include Inductotherm, Ultraviolet and Infra-Red, Hydrotherapy Bath, Galvanic and Sinusoidal Current Generators and the new Metal Locator.

HANOVIA CHEMICAL AND MANUFACTURING COMPANY.

Late models of self-lighting type ultraviolet quartz lamps for orificial and body irradiation will be on display. Newer models of our Safe-T-Aire equipment for the destruction of air-borne bacteria will be on display for the first time. Competent and courteous representatives will be on hand to extend a cordial welcome.

ILLE ELECTRIC CORPORATION.

Hydromassage Subaqua Therapy Equipment. — Ille Electric Corporation will demonstrate in their booth how the care of infantile paralysis, arthritis and other disabling conditions can be greatly improved by hydromassage subaqua therapy tanks. They will also display an improved "Mobile Whirlpool Bath," Mobile Sitz bath chair, Paraffin bath and Folding Thermostatic bed tent.

PAUL E. JOHNSON, MFRS.

Paul E. Johnson, Mfrs., offer to the medical profession high quality, well built, efficient physical therapy equipment consisting of short wave diathermy units, galvanic, sinusoidal and faradic current units, ultraviolet lamps of the quartz and carbon arc types, localized as well as body types infra-red lamps and colonic irrigators.

L. & B. REINER.

On display will be representative lines of H. G. Fischer & Company equipment including the Fischer Model "J" Galvanic and Contractile Currents Generator, the New Fischer Model FCW Short Wave, and the Fischer Ultra Violet Generator. CARDIOTRON the Direct-Recording Electrocardiograph will be in actual operation. Also displayed will be the Jones MOTOR-BASAL Metabolism apparatus.

R. J. LINDQUIST COMPANY.

You will see demonstration units of the new CHRONO-WAVE low voltage generator; ULTRA SHORT WAVE instruments; DESERT-SUN lamps; and the CHRONAXI-METER, products of the R. J. Lindquist Co., of Los Angeles. Be sure to ask for a complimentary set of Electro-diagnosis charts.

LEA & FEBIGER.

Lea & Febiger will display among their books Kovács' Electrotherapy and Light Therapy, Kovács' Manual of Physical Therapy, Ewerhardt and Riddle's Therapeutic Exercise, Quiring's The Extremities, Soffer's Diseases of the Adrenals, Stone & DuFault on Diagnosis and Treatment of Pulmonary Tuberculosis, Scott and Van Wyck's Obstetrics and Gynecology, Bell on Renal Diseases. New editions of many standard works will be shown.

THE LIEBEL-FLARSHEIM CO.

It will be a privilege for The Liebel-Flarsheim Company to exhibit their latest model BOVIE electrosurgical units and short wave diathermies at the 1946 convention of the American Congress of Physical Medicine. The company and its representatives cordially invite you to visit their booth for examination and demonstration of the latest developments in their electrosurgical and diathermy apparatus.

McINTOSH ELECTRICAL CORPORATION.

McIntosh Electrical Corporation will have on display physical medicine equipment.

MERCK & COMPANY, INCORPORATED.

The administration of Mecholyl Chloride by ion transfer introduces the drug into the tissues by means of direct current. The resulting increased peripheral blood flow is of value for the palliative local treatment of chronic (rheumatoid) arthritis, chronic ulcers, Raynaud's disease, scleroderma and other vasospastic conditions of the extremities.

MOORADIAN HIGH FREQUENCY LABS.

To all who are interested in fine equipment for Physical Medicine, a cordial invitation is extended to visit our booth.

PHILIP MORRIS & COMPANY.

Philip Morris & Company will demonstrate the method by which it was found that Philip Morris Cigarettes, in which diethylene glucol is used as the hygroscopic agent, are less irritating than other cigarettes. Their representative will be happy to discuss researches on this subject and problems on the physiologic effects of smoking.

REXAIR, INC.

Rexair is a portable air cleaner that performs many hospital jobs. It purifies, deodorizes and humidifies the air; cleans floors, walls and furniture; scrubs floors; draws in dustladen air and sends out clean, moist air. Dirt is trapped in water, poured down the drain. There is no bag to empty.

SARATOGA SPRINGS AUTHORITY.

This exhibit consists of a photographic montage designed to show facilities available to the public at the Saratoga Spa as part of the health service of New York State. The photographs were taken in and about the various buildings on the State's 1,200-acre reservation. They display the bottling and distribution of the natural mineral waters, laboratory and research activities, scenic views, recreation facilities and various treatments using natural mineral waters as given at three bath houses. These include mineral baths and packs, as well as heat cabinet, light ray and other treatments.

Saratoga Geyser water, bottled at the Saratoga Spa by the State of New York will be served.

TECA CORPORATION.

There will be exhibited the latest models of galvanic and sinusoidal generators, designed for therapeutic applications requiring low voltage currents; the new Low-Voltage Generator SP3, with original facilities and circuit divisions; the new model HP4, delivering continuous currents in various forms and the TECA Bitrodes, bipolar electrodes for testing and local treatments.

THERMIONIC ENGINEERING CORPORATION.

The Thermionic Engineering Corporation announces its entrance into the field of radio-therapy equipment and proudly presents the FLECTROTHERM and the THERMITE, the finest diathermy apparatus ever built.

You are cordially invited to visit us in our booth where these devices are on display and complete information is available.

The Treatment of
**SCLERODERMA AND
VASOSPASTIC CONDITIONS OF
THE EXTREMITIES, INCLUDING
RAYNAUD'S DISEASE AND
CHRONIC ULCER**

THIS 16 MM. SILENT KODACHROME MOTION PICTURE (running time, 15 minutes), shows the technic of administering Mecholyl Chloride by the method of ion transfer (iontophoresis) and the results of treatment in chronic ulcer and scleroderma. The film will be loaned to interested physicians on request. Applications for loan will be filled as quickly as prints of the film are available. Please enter your request as far in advance as possible.

*Address communications
regarding film to
Merck & Co., Inc.
Dept. RA,
Rahway, N. J.*

Mecholyl Chloride has been accepted by the Council on Pharmacy and Chemistry. Its administration by ion transfer (iontophoresis) was found to increase blood flow five times in the forearm skin and six and one-half times in the leg skin.



MERCK & CO., Inc. *Manufacturing Chemists* **RAHWAY, N. J.**

**MECHOLYL
CHLORIDE**

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ACETYL BETA-METHYLCHOLINE
CHLORIDE MERCK

*An effective
parasympathetic
stimulant*

COUNCIL



ACCEPTED

GEORGIA WARM SPRINGS FOUNDATION THREE MONTHS GRADUATE COURSE

PHYSICAL THERAPY IN THE CARE OF POLIOMYELITIS

This course is open to graduates of courses in physical therapy approved by the Council of Medical Education and Hospitals of the American Medical Association and members of the American Physiotherapy Association and/or American Registry of Physical Therapy Technicians.

TUITION: None. For Scholarship, contact the Georgia Warm Springs Foundation or American Physiotherapy Association.

ENTRANCE DATES: First Monday of January, April and October.

PURPOSE OF COURSE: To train qualified physical therapists in the care of all phases of poliomyelitis:

1. Accurate Muscle Strength Evaluation.
2. Body Mechanics.
3. Muscle Reeducation, Including Underwater Exercises.
4. Correct Use of Assistive and Supportive Apparatus.
5. Walking Reeducation.

For Information Write:

ROBERT L. BENNETT, M.D.
Georgia Warm Springs Foundation
Warm Springs, Georgia



THIS remarkable new **FISCHER** unit embodies the latest and most advanced features of short wave construction. Permits use of all types of electrodes. Affords every type of short wave application. Power more than ample for every need. Control is very fine. All-steel cabinet cuts off radiations. Unit mounted on free-rolling casters.

Not Just Equipment! SHORT WAVE SERVICE!

A modern, all-service apparatus designed and built to operate within the wave bands allocated by the Federal Communications Commission.

IT TAKES quality-built apparatus to give quality service. Apparatus that will give passable service for a while is easy to build. Apparatus that will deliver fine trouble-free performance, day after day and year after year, is something more than just equipment—it is a virtually inexhaustible mine of adequate short wave service. **FISCHER**-built short wave apparatus is designed to give users full and continuous satisfaction. Longer service also means lower cost.

Let us send you full information. No obligation. Simply ask for our large, 2-color folder, illustrating and describing our **FISCHER** Model "FCW" Short Wave Apparatus.



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The automatic breathing machine for the treatment of respiratory failure in adults, children or the new-born.

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OPPORTUNITIES

WANTED—PHYSICAL THERAPISTS FOR THE FOLLOWING: (a) To take charge of department in new hospital located short distance from well known health resort in the Southwest; \$250-350. (b) To join staff of department of physical therapy in large hospital in southern California; minimum \$230; increase salary if candidate has had experience in treating infantile paralysis. (c) Eight-man clinic operating own hospital of 100 beds, town of 12,000 in Northwest Texas; \$250. (d) New group staffed by twelve specialists, practically all American Board men; university medical center; East; minimum \$200. (e) Supervisor of posture for public schools of eastern city; project sponsored by crippled children's organization in conjunction with school district; degree in physical education and teaching ability required; \$3,000. (f) Well qualified man with good background in hydrotherapy; 85-bed hospital, South; \$250-\$300. (g) To direct new department, large hospital, West Coast; salary \$250. (h) Two, registered; 300-bed hospital located in large city of Southeast; \$150-\$200, complete maintenance included. (i) To take full charge of department in 250-bed general hospital; treatments average 10,000 annually; middle-western metropolis.

For further information, please write,
BURNEICE LARSON, Director, Medical Bureau,
Palmolive Building, Chicago 11.

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Address.....

City and State.....

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Physical Therapist, male or female. Department established two years ago in 150 bed general hospital. New equipment, employing one technician. Expansion program planned for hospital and this department. Located in industrial town. Salary \$200.00 per month and meals. Fairmont General Hospital, Fairmont, W. Va.

WANTED:

Male Physical Therapist for old established industrial office,
200 Republic Building,
Cleveland 15, Ohio.

WANTED: FEMALE PHYSICAL THERAPIST

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Technicians

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MEETINGS OF INTEREST TO THOSE IN THE FIELD OF PHYSICAL MEDICINE

In these columns will be published information about meetings of interest to those in the field of physical medicine. New data should be sent promptly to the office of the Secretary, 2 E. 88th St., New York 28, N. Y.

American Congress of Physical Medicine, 24th Annual Session, Hotel Pennsylvania, New York, September 4, 5, 6 and 7, 1946; **Instruction Course** to be held during the meeting; Dr. Richard Kovács, 2 East 88th Street, New York 28, Secretary. See announcement elsewhere this issue.

The Pennsylvania Academy of Physical Medicine; meetings at the Philadelphia County Medical Building, 21st and Spruce Streets. For 1946 schedule inquire of Secretary, Dr. Harold Lefkoe, 1824 Spruce Street, Philadelphia 3.

Southern California Society of Physical Medicine, Secretary-Treasurer, Dr. Clarence Dail, 802 Acacia Street, San Gabriel, Calif.

American Occupational Therapy Association, Congress Hotel, Chicago, August 11 to 15, 1946. Mrs. Meta R. Cobb, Executive Secretary, 33 West 42nd Street, New York 18, N. Y.

HOTEL RATES

American Congress of Physical Medicine

September 3, 4, 5, 6, 7, 1946

Hotel Pennsylvania New York City

Unless requested otherwise, we will hold your reservation until 9 p. m. of the day of your arrival.

Date Arriving.....	Hour.....	A. M.	P. M.
Room and Bath	3.85 <input type="checkbox"/>	5.50 <input type="checkbox"/>	
for One	4.40 <input type="checkbox"/>	6.05 <input type="checkbox"/>	
Per Day	4.95 <input type="checkbox"/>	6.60 <input type="checkbox"/>	
		7.15 <input type="checkbox"/>	
Double-Bed Room	5.50 <input type="checkbox"/>	7.70 <input type="checkbox"/>	
with Bath	6.05 <input type="checkbox"/>	8.25 <input type="checkbox"/>	
For Two—Per Day	6.60 <input type="checkbox"/>	8.80 <input type="checkbox"/>	
Twin-Bed Room		7.70 <input type="checkbox"/>	
with Bath	6.50 <input type="checkbox"/>	8.25 <input type="checkbox"/>	
For Two—Per Day	7.15 <input type="checkbox"/>	8.80 <input type="checkbox"/>	
SUITE—		11.00 <input type="checkbox"/>	
Living Room,			
Bed Room and Bath	10.00 <input type="checkbox"/>	13.00 <input type="checkbox"/>	

MORE THAN 2 PERSONS IN 1 ROOM
For each additional person in Double or Twin-Bed Room the extra charge is \$2.00 per day.

If a room at the rate requested is unavailable, reservation will be made at the next rate.



See Our Demonstration at
American Congress of Physical Medicine,
New York City.

ILLE HYDROMASSAGE

FOR GRATIFYING RESULTS IN SUBAQUA THERAPY

Many government, civilian and industrial hospitals consider the ILLE Improved Hydrotherapeutic Tank indispensable in the practice of physical medicine.

Excellent—even spectacular—results have time and again been attained with Ille equipment in the rehabilitation of the paralytic... in functional improvement of the arthritic... following orthopedic surgery of the extremities... and in the after-care of fractures.

The improved ILLE Hydrotherapeutic Tank, equipped with twin turbine ejectors and accurate thermostatic control, provides the outstanding means for achieving maximum benefits from under-water therapy.

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Heavy Duty Switches rated at many times normal load. No chance of failure here!

Solid, polished phenolic panel.

Extractor fuse post, for protection. Fuse may be changed from front of panel.

Power transformer in chromium-plated case. High safety and overload factors prevent possibility of burn-out. Note accessibility of all terminals—plainly marked.

All high-frequency coils plated for efficiency and durability. Other metal parts chromium plated. No corrosion, oxidizing or tarnishing.

Mycelux mountings for superb insulation at high frequencies.

Output Jacks recessed for safety.

Resonance condenser of finest quality. Rounded and buffed aluminum plates—ultra stentite insulation—heavy phosphor-bronze contact springs.

Heavy duty oscillator tubes. More durable—more powerful.

Rectifier tubes supply rectified high voltage to oscillators.

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Name and Location of School	Medical Director	Technical Director	Entrance Requirements *	Duration of Course	Time of Admission	Maximum Enrollment	Tuition	Certificate, Diploma, Degree
Children's Hospital, Los Angeles ¹	Samuel Mathews, M.D.	Miss Lily Graham	a-b-c	14 mos.	Sept	14	\$200	Diploma
College of Medical Evangelists, Los Angeles ¹	Fred B. Moor, M.D.	A. H. Carlson	a-b-c-d	12 mos.	Sept	20	\$225	Cert. or Dipl.
University of California Hospital, San Francisco ¹	Frances Baker, M.D.	Miss Margery L. Wagner	a-b-c	12 mos.	March/Sept	10	\$150	Certificate
Stanford University, Stanford University, Calif. ¹	W. H. Northway, M.D.	Miss Lucille Daniels	a-b-d	10 mos.	Quarterly	16	\$409	Cert. or Degree
Northwestern University Medical School, Chicago.....	John S. Coulter, M.D.	Miss Gertrude Beard	a-b-d	12 mos.	July/Oct	16	\$300	Certificate
State University of Iowa Medical School, Iowa City.....	W. D. Paul, M.D.	Miss Olive C. Farr	f	12 mos.	Sept	...	\$200	**
University of Kansas School of Medicine, Kansas City ¹	G. M. Martin, M.D.	Miss Ruth G. Monteith	a-b-c ²	12 mos.	Feb/Sept	20	\$ 50 ³	Cert. or Degree
Bouvé-Boston School of Physical Education, Boston.....	Arthur L. Watkins, M.D.	Miss Constance K. Greene	c ⁴	10 mos.	Sept	15	\$250 ⁴	Cert. or Degree
Harvard Medical School, Boston.....	James W. Sever, M.D.	Miss Janet B. Merrill	a-b-d	9 mos.	Varies	22	\$300	Certificate
Boston University, College of Physical Education for Women, Sargent College, Cambridge, Mass.....	Louis Howard M.D.	Miss Adelaide L. McGarrett	H.S.	4 yrs.	Sept	20	Varies	Cert. or Degree
University of Minnesota, Minneapolis ¹	M. E. Knapp, M.D.	Miss Ruby Green	c	12 mos.	June	24	\$200 ³	Certificate
Barnes Hospital, St. Louis.....	F. H. Ewerhardt, M.D.	Miss Beatrice F. Schulz	a-b-c	9 mos.	Oct	12	\$200	Certificate
St. Louis University School of Nursing, St. Louis ¹	A. J. Kotkis, M.D.	Sister Mary Imelda	a ²	10 mos.	Jan-Sept	12	\$250 yr.	Cert. or Degree
Columbia University, College of Physicians and Surgeons, New York City ¹	William B. Snow, M.D.	Miss Josephine L. Rathbone	a-c ⁴	2 yrs.	Sept	35	\$400 yr.	Cert. or Degree
New York University School of Education	George G. Deaver, M.D.	Miss Elizabeth C. Addoms	a-b-c	9½ mos.	Sept	40	\$525	Cert. & Degree
Duke Hospital, Durham N. C. ¹	Lenox D. Baker, M.D.	Miss Helen Kaiser	a-b-d	12 mos.	Oct	12	\$300	Certificate
D. T. Watson School of Physiotherapy, Leedsdale, Pa. ¹	Jessie Wright, M.D.	Miss Kathryn Kelley	a-b-d	12 mos.	Oct	30	\$200	Dipl. or Degree
Graduate Hosp. of the Univ. of Pennsylvania, Phila. ¹	G. M. Piersol, M.D.	Miss K. Sutherland	a-b-c	12 mos.	Sept	20	\$300	Certificate
University of Texas School of Medicine, Galveston ¹	G. W. N. Eggers, M.D.	Miss Ruby Decker	a-b-c	9 mos.	Jan	6	\$110	Certificate
Baruch Center of Physical Medicine of the Medical College of Virginia, Richmond, in affiliation with Richmond Professional Institute ¹	F. A. Hellebrandt, M.D.	J. J. Buchanan, M.D.	a-b-c ²	12 mos.†	Sept	20	\$200 ³	Cert. or Degree
University of Wisconsin Medical School, Madison ¹	Elizabeth Grimm, M.D.	Miss Margaret A. Kohli	a-b-c ²	12 mos.	Sept	20	\$ 98 ³	Cert. or Degree

* Courses are so arranged that any of the entrance requirements will qualify students for training. a = Graduation from accredited school or nursing; b = Graduation from accredited school of physical education; c = Two years of college with science courses; d = Three years of college with science courses; e = Four years of college with science courses; H. S. = High school graduation; f = degree in physical education or sciences.
† Currently eighteen Navy nurses are enrolled in a six-month emergency course.

1. Male students admitted.
2. High school graduates admitted to four-year course leading to degree.

3. Non-residents charged additional fee.
4. High school graduates admitted to four-year course leading to degree from Tufts College.
5. Tuition for degree course is \$400 per year.
6. College graduates admitted to twelve-month certificate course.
- ‡ Reprinted in part J. A. M. A. 130:1156 (April 20) 1948.
- ** At the end of nine months the students can register in the graduate school for a degree of master of science in Physical Therapy.

APPROVED SCHOOLS FOR OCCUPATIONAL THERAPY TECHNICIANS * **Council on Medical Education and Hospitals of the American Medical Association**

NOTE: The duration of the course is expressed in academic years and in most schools the accelerated curriculum is being followed.

Name and Location of School	College Affiliation	Duration of Course	Classes Start	Entrance Requirements	Tuition Per Year	Certificate, Diploma, Degree	Graduates in 1946
University of Southern California, 3551 University Ave., Los Angeles	University of Southern California	2 yrs.	Sept	Degree	\$330	Certificate	8
Mills College, Oakland, Calif.	Mills College	5 yrs.	FebSept	High sch.	\$330	Cert.&B.S.	4
San Jose State College, San Jose, Calif.	San Jose State College	3 yrs.	FebSept	Degree	\$200	Certificate	1
University of Illinois College of Medicine, 1853 W. Polk St., Chicago	University of Illinois	5 yrs.	FebSept	High sch.	\$450	Cert.&Deg.	
University of Kansas, Lawrence	University of Kansas	3 yrs.	JanOct	1 yr. coll.	\$ 21	Certificate	
Boston School of Occupational Therapy, 7 Harcourt St., Boston	Tufts College	5 yrs.	Varies	High sch.	\$ 21	Degree	
Kalamazoo School of Occupational Therapy, Western Michigan College of Education, Kalamazoo	Western Michigan College of Education	4½ yrs.	Varies	High sch.	\$ 80	B.S.	None
Michigan State Normal College, Ypsilanti	Michigan State Normal College and Univ. of Michigan	2 yrs.	FebSept	Degree	\$ 50	Certificate	1
St. Louis School of Occupational and Recreational Therapy, 4567 Scott Ave., St. Louis	Washington University	4 yrs.	FebSept	High sch.	\$ 50	B.S.	
University of New Hampshire, Durham	Univ. of New Hampshire	2 yrs.	Sept	Degree	\$400	Diploma	41
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York City	Columbia University	3 yrs.	Sept	1 yr. coll.	\$400	Diploma	
New York University School of Education, 100 Washington Sq. E., New York City	New York University	5 yrs.	Sept	High sch.	\$400	Dipl.&B.S.	20
Ohio State University, Columbus	Ohio State University	2 yrs.	July	Degree	\$ 51	Certificate	
Philadelphia School of Occupational Therapy, 419 S. 19th St., Philadelphia	University of Pennsylvania	4 yrs.	FebSept	1 yr. coll.	\$ 95	Cert.&Deg.	
Richmond Professional Institute, 901 W. Franklin St., Richmond, Va.	College of William and Mary	5 yrs.	Varies	High sch.	\$ 67	Cert.&Deg.	8
Milwaukee-Downer College, Dept. of Occupational Therapy, 2512 E. Hartford, Milwaukee	Milwaukee-Downer College	3 yrs.	Sept	High sch.	\$350	B.S.	13
Mount Mary College, 2900 Menomonee River Dr., Milwaukee	Mount Mary College	5 yrs.	Sept	2 yrs. coll.	\$160	Cert.&Deg.	5
University of Toronto, Dept. of University Extension, Toronto, Ont., Canada	University of Toronto	2 yrs.	Sept	Degree	\$450	Certificate	18
		3 yrs.	Sept	2 yrs. coll.	\$450	B.S.	
		4½ yrs.	Quarterly	High sch.	\$450	Cert.&Deg.	13
		4½ yrs.	Quarterly	High sch.	\$ 80	B.S.	11
		2 yrs.	Sept	Degree	\$400	Diploma	45
		3 yrs.	Sept	1 yr. coll.	\$400	Dipl.&B.S.	
		5 yrs.	Varies	High sch.	\$400	Dipl.&B.S.	
		2½ yrs.	Sept	Degree	\$200	Certificate	4
		3 yrs.	Sept	1 yr. coll.	\$200	Diploma	
		3 yrs.	Sept	1 yr. coll.	\$250	Diploma	15
		5 yrs.	Sept	High sch.	\$250	Dipl.&B.S.	
		5 yrs.	Sept	High sch.	\$210	B.S.	7
		3 yrs.	Sept	1 yr. coll.	\$175	Diploma	40

INSTRUCTION SEMINAR

In Conjunction with the

24th Annual Scientific and Clinical Session

AMERICAN CONGRESS OF PHYSICAL MEDICINE

September 4, 5, 6, 7, 1946

HOTEL PENNSYLVANIA

NEW YORK, N. Y.

	Wednesday September 4	Thursday September 5	Friday September 6
8 A.M. to 9 A.M.	(1) Peripheral Nerve Injuries (Physiologic Studies) Hines Roof Private Dining Room	(7) Physiologic Basis for Therapeutic Exercise F. Hellebrandt Roof Private Dining Room	(13) Rehabilitation of In- dustrial Injured Aitken Roof Private Dining Room
	(2) Anatomical Reasons for Foot Strain (Treatment) Frances Baker 18th Floor Headquarters	(8) Fundamentals of Elec- tricity as Applied to Physical Medicine Lion 18th Floor Headquarters	(14) Tests and Measurements (Joints; Strength Tests) Molander 18th Floor Headquarters
9 A.M. to 10 A.M.	(3) Pain (Types: Neurotic, Radiating or Referred, Causalgic, Ischemic) Harpuder Roof Private Dining Room	(9) Reconditioning in Cer- tain Medical and Sur- gical Conditions (Car- diacs, Chest Surgery) Huddleston Roof Private Dining Room	(15) Electrical Stimulation of Denervated Muscle (With Actual Demon- stration on a Model) Osborne Roof Private Dining Room
	(4) Low Back Pain (Ana- tomical and Mechanical Basis) Jessie Wright 18th Floor Headquarters	(10) Prescription Writing in Physical Medicine Martin 18th Floor Headquarters	(16) Use of Physical Ther- apy Following Various Fractures of the Extremities Knapp 18th Floor Headquarters
1 P.M. to 2 P.M.	(5) Functional Anatomy of the Shoulder Girdle Quiring Roof Private Dining Room	(11) Essentials of Muscle Reeducation Bennett Roof Private Dining Room	(17) Rehabilitation of the Severely Disabled Deaver Roof Private Dining Room
	(6) Functional Anatomy of the Hand Marble 18th Floor Headquarters	(12) Lecture and/or Dem- onstration (Crutch Walking) Deaver 18th Floor Headquarters	(18) Hydrotherapy and Spas (Present Status) Behrend 18th Floor Headquarters

The Seminar is intended primarily for physicians but a limited number of the members of the American Registry of Physical Therapy Technicians will also be admitted. One or more lectures may be taken, but nine lectures comprise a full schedule. The charge for single lectures is \$2.00; for the full schedule of nine lectures \$15.00.

For information and application form address

AMERICAN CONGRESS OF PHYSICAL MEDICINE

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Chicago 2